JUMP POINT

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IN THIS ISSUE

GREETINGS, CITIZENS!

I've had time to read the feedback I asked for last month, and spend some time cogitating on **Jump Point**'s place in the universe. Specifically, its place in the 'verse.

I have drawn a couple of conclusions. One, Cloud Imperium's marketing is really good, and constantly getting better. When I say "marketing," I'm focusing on how well it keeps you informed about the game; I have never been a good judge (or practitioner) of how to sell a game, so I don't have an opinion in that regard.

But there are several strong channels competing to tell you everything you want to know about *Star Citizen*, and I've been concentrating on defining **JP**'s strengths relative to those other channels, and how to develop them.

JP has several obvious strengths, according to your feedback, and while none of these are enjoyed by 100% of our subscribers, there is solid support for Portfolio, Galactic Guide and Chronicles. Given that they aren't being duplicated elsewhere by CIG, it's a safe bet that they'll keep appearing.

Work In Progress is an example of not being able to please all the people all the time. This month's issue not withstanding, I suspect we'll have less focus on ship development month after month, and cover more of the other areas being developed in the game. Please do keep giving us feedback on what you want to see (but please also realize that we can't possibly pick up on every suggestion we're given). WIP is a challenge to keep fresh, because (as several of you have mentioned) there are only so many ways to design a ship or a gun or a landing zone, and we don't want to keep saying the same things over and over. I'll work on it, and I'm sure you'll keep giving us your feedback. :)

One thing I recognize is that those of you who have been looking for it have already seen a lot of the images that we're publishing in this month's Retaliator WIP, and that's not unusual – this is one of the ways that CIG's other marketing is doing so well that it's making **JP** less novel. It's the discussions that make WIP different, and I'll keep trying to get those to you (while staying aware of the need to avoid repetition).

Which leaves Behind the Scenes. There are a whole lot of ways that CIG is keeping you informed about game development, but I think I've found a niche for **JP** in the typed group interviews we've been doing. I've gotten several contributors together to discuss a part of the game that they have in common, and collected their conversation for Behind the Scenes. It seems to be getting pretty positive feedback, and (this month at least), I'd like to focus on that – please post in the JP Feedback thread, or send me a note, to let me know what groups you'd like to hear from. And if I get my act together (no guarantees), I may be able to solicit questions from you for April's interview. I'll start a thread if I do, so keep an eye out!

Hold on, it's gonna be a wild ride!

David

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FROM THE HELM

Retaliator

AEGIS
DYNAMICS

AEGIS
DYNAMICS

After far too long, we've finally got the Retaliator WIP. It's a two-part project, with uber-freelancer **Ryan Church** creating the concept and **Nathan Dearsley**, at Foundry 42, taking it to completion. Let's begin with the initial prospectus:

Chris Roberts: Here is the Retaliator info (think B29 or B52):

Builder: Aegis Dynamics

Crew (max): 6

Mass (empty): 89,000 Kg

Focus: Strategic Bombing

The Retaliator is the UEE's premiere, if aging, jump-capable heavy bomber. A massive formation of these spacecraft running a long-range strike mission is not an uncommon site around the fringes of the empire. With a distinctive elongated silhouette that is dotted with turrets and carrying a massive bomb load, the Retaliator is an effective symbol of imperial might. As such, it is the frequent centerpiece of Space Force recruiting posters. Retaliators are ground-based, with all but the largest carriers unable to operate them effectively.

Heavily modified Retaliators are becoming commonplace on the civilian market as the design ages and earlier production runs are sold off en-mass. Outfitted to carry cargo instead of antimatter bombs and with the waist turret positions typically swapped for makeshift living quarters, they make a good medium freighter or a basic explorer. Some have even been converted into long-hop passenger spacecraft!

Upgrade Capacity: 8

Cargo Capacity: 30 tonnes (bomb-load)

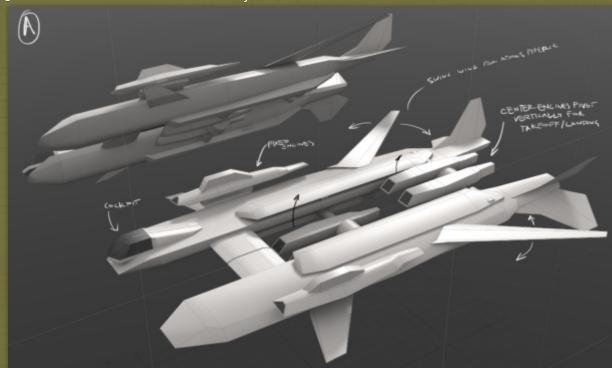*Thrusters:* 5 x TR5, 8 x TR2

Hardpoints:
Equipped 8x A&R Stryker (FoF) missiles (maybe a note that the Retaliator can carry anti-capital chip torpedoes?)

5 x Class 4: Behring M5A Laser Cannon (turret): Ventral (underneath), dorsal (top), tail, left and right beam / waist (side)
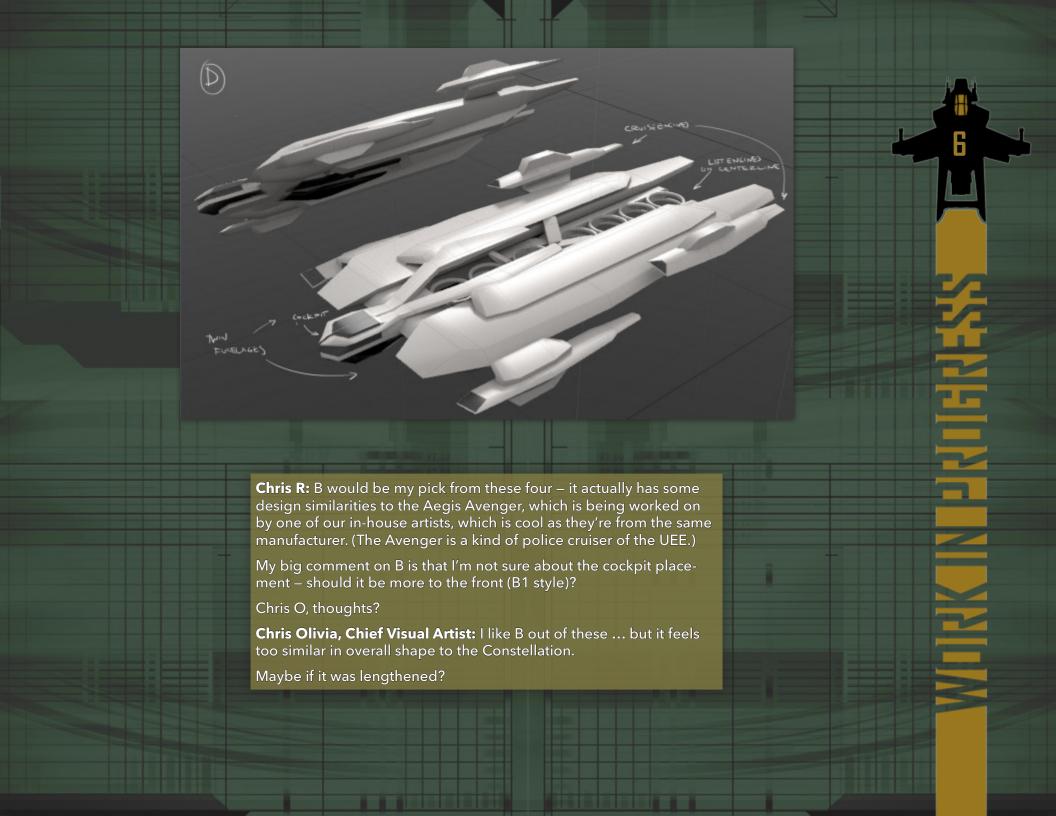
Ryan Church, Freelance Concept Artist: Chris, attached are some *very* rough Retaliator Bomber layout concepts. Definitely the balsa block and chewing gum version. But enough to start to talk layout.

Let me know if any appeal to you in any way. Guns will be added, details, engines beefed up etc.

Also, I can take any of them to any aesthetic – the Carrier/Constellation aesthetic, the Idris aesthetic, or anything else you like: swoopy stealth sleek, clunkier than the Idris, B-29 streamlined with large radii constant curvature forms, etc. All with the realism and functionality we've been doing, but with a dash of something else if you want it. Let me know what you think.

B

COCKPIT

SWING WING FOR ATMOS HYPERSLIC

C

COCKPIT

LIFT ENGINES
ON CENTERLINE

CRUISE ENGINES

TWIN
FUSELAGES

5

CRUISE ENGINE

LIFT ENGINES
ON CENTERLINE

COCKPIT

TWIN
FUSELAGES

Chris R: B would be my pick from these four — it actually has some design similarities to the Aegis Avenger, which is being worked on by one of our in-house artists, which is cool as they're from the same manufacturer. (The Avenger is a kind of police cruiser of the UEE.)

My big comment on B is that I'm not sure about the cockpit placement — should it be more to the front (B1 style)?

Chris O, thoughts?

Chris Olivia, Chief Visual Artist: I like B out of these … but it feels too similar in overall shape to the Constellation.

Maybe if it was lengthened?

Ryan: Guys, attached is an image along the lines of what we were discussing – longer, more functionality called out, etc.

The ship is divided into a front fuselage and a rear engine/ swing wing aft fuselage.

The cockpit is at the front of the front fuselage with a tight but adequate living space directly behind along the centerline.

Canard lifting surfaces deploy at low speed in the atmo- sphere. These hide away while in space.

On either side of that crew area in the front fuselage are the bomb bays, with doors on the bottom.

On top of the front fuselage are two inlets that feed the aft- most warp (space) engines.

In the very front of the front fuselage on either side of the cockpit would be lift fans buried in there.

There are four engines midships that function in atmosphere and in space. For landing and take-off they tilt vertically to supplement the lift fans in the front and aft fuselage.

In the aft fuselage are the swing wings: forward for atmo- spheric flight and stowed for high speed or space flight.

At the back of the aft fuselage are two space/warp engines fed by the top front fuselage intakes.

There are five guns as you specify.

The ship is currently 90 meters long, which is a super rough estimate. I tried to keep it as small as possible but still look long and sleek.

Let me know what you think; still rough but starting to form.

Chris R: I'm digging it – and it's different than the normal Ryan style which is also pretty cool!

How about trying the cockpit behind the front turret (where there is currently a bump between the two big intakes)? We could make the Retaliator seem a bit more SR71 Blackbird-ish.

Retaliator is meant to be about 50M long (per the current made-up designer stats), so maybe 90M is too much (that's the length of the Starfarer super transport). Maybe we go for 60-70?

Chris O: Hey, Ryan, looking cool!

I know this is blasphemy, but I'm trying to practice very quick paint-overs.

So I threw some things on the largest image in your rough. I'm not really giving direction, but lemme know if you are digging anything.

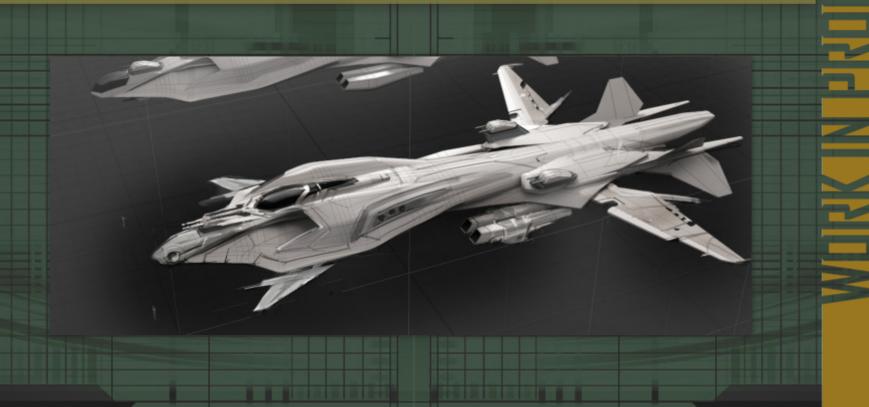(I do like the more forward swept front fins, however.)

Thanks!

Chris R: Very nice! Seeing the cockpit moved back makes me confident that was the right note – makes the ship feel a little sleeker / more deadly.

Ryan: Yeah, cool! The cockpit, more swept forward canards, surface breakup – I'll proceed along these lines.

One thing I was thinking is that in the space mode, maybe stuff will pop out that you'd need in zero-G: docking collars, radiators, antennas, stuff like that which could all retract for atmospheric flight, giving it a different look while in space.

As for the size, I'll definitely get it down to the 50-70 meter range, as small as possible. One warning is that it will definitely get tight on the inside, more aircraft/submarine than ship, which is cool with me. Do we have a minimum hallway/door size in the game engine? I've been sticking with about 36" absolute minimum for doors, corridors and stairs, I usually try and go much bigger than that so characters can pass each other in the hallway.

cockpit with six seats

centerline bomb bay | toilet | beds/hypersleep | kitchen

side bomb bay or cargo

navigation

Ryan (with replies interspersed from **Chris R**): The forward fuselage and intakes have gotten too curved, I'll go back to the more aggressive look of the last pass/paintover. That said, I wanted to run some internal packaging stuff by you and ask a few questions too.

[CR] Yeah, I feel we're too close to B1 territory now.

[RC] Overall length is now 54 meters long.

[CR] I think we need 75 or 80M, as right now it's the same size as the Constellation but much narrower.

[RC] You have the canopy up top, under which can sit all 6 crewmembers

[CR] Per my above note, I would prefer the crew members be distributed around the ship – maybe just a pilot / co-pilot / bombardier set up top? There should be an area for passengers to sit as well.

[RC] Directly under that is the large room: 12 meters x 3.4 meters wide with a door at each end. The kitchen is at the rear and there is navigation or workspaces towards the front.

There's also a transparent wall on the side so you can see the bombs or cargo. I could make this a large sliding door or series of doors or airlock or something? It's kind of cool to be able to look at the bombs or cargo.

[CR] It would be cool to see the planetary bombs / ship to ship missiles.

[RC] On each side of that room is a bomb bay/cargo space. In this model they are occupied by a cylindrical bomb bay holding two rows of bombs that are suspended along the centerline of the cylinder. The bomb assembly would rotate so the one you want to drop is held over the open door on the bottom of the ship. The cylindrical bomb holders are 10 x 2 x 2 meters and the bays that those holders fit into are even bigger (straight walls versus the curved cylindrical walls).

There's also a smaller bomb bay on the rear centerline between the warp engines, 8.5 x 2 x 2 meters.

Forward of the large room is a short corridor to access the one top and two bottom nose guns.

Behind the large room is a small room that holds 8 hypersleep beds – enough for the crew and two hitchhikers. I would plan for these to act as escape pods too as usual.

[CR] Sounds good.

[RC] Questions: Due to the swoopy shape, height of corridors is a critical issue with this. What is the minimum height for a walking character to comfortably negotiate in the game?

[CR] Bryan Brewer our animator can speak to this – I'm assuming we can have a "ducking" additive animation on our character walking that could play if we're in tight quarters.

[RC] And what is the height a crawling character could comfortably negotiate – can they crawl? If not, then I will have to raise some ceilings, sacrifice some wall thicknesses (shielding) or reconfigure some of the parts of the ship, the most critical now being the rear top fuselage guns, which could only be accessed by crawling, and the front gun bay, which has very low ceilings (like 7 feet in the current design).

I always want to make for realistic wall thicknesses and stuff, so I need to factor that in.

Another issue for this design are the gun turrets – they are smaller than usual, so the top ones are not a problem since you can just stand and put your torso into them, but the bottom ones may have to remain fully automatic as there's not enough room to crunch down into them and see out. I could make them extend out when in space or have them be fully automatic or something else?

[CR] I think all the turrets have to be manned.

[RC] I don't yet have landing gear, boarding ladder, docking collar or landing gears.

You can see I've roughly placed some cylinders to show where I will cut away and place lift fans in the front and aft fuselage.

[CR] That's fine, although in general I would concentrate on cool maneuvering thrusters / VTOL jets rather than lift fans, as you'll never appreciate the lift fans outside of an in-engine cinematic sequence when you're taking off / landing.

[RC] OK thanks, like I said this check-in is mostly about packaging. The aesthetics aren't there yet and I'm going for a more aggressive look like Chris' paintover.

Chris R: I feels like it should go to 75M; it feels too short now. It should feel bigger than the Constellation; right now it's the same length but much narrower.

I'm also not sure about having 6 seats up in the cockpit section. I kind of saw the Retaliator like a B29 of old, so the various crew stations would be distributed around at the various turrets and areas — bombardier, engineer (in charge of power plant), etc.

Also the turrets need to be big enough to be manned, so more in the line of the manned turrets in the Constellation or the Idris — but think the various gunnery stations of a B29.

Ryan: The notes look good — increasing the size to 80 meters will make it much easier to fit all of the corridors and passages to the guns in there. The figures might not even have to crouch, although I think that's still a cool thing to look into so we can have shorter corridors here and there.

It'll also help raise the size to the stated empty weight of 89,000 kg.
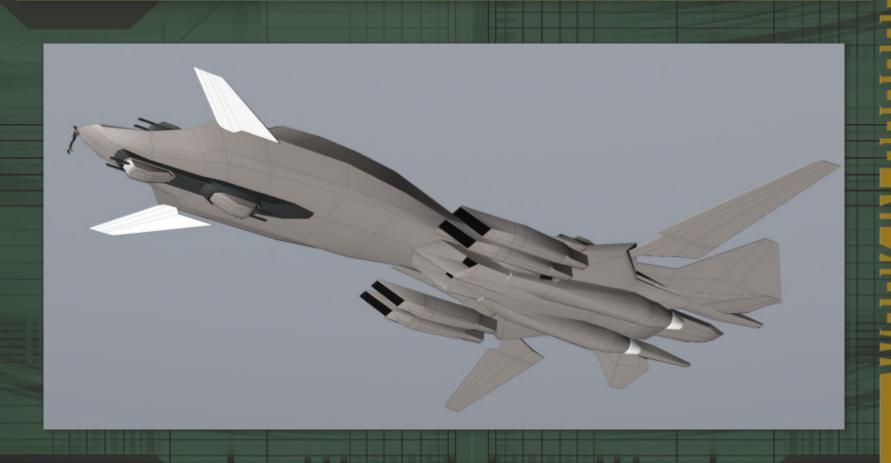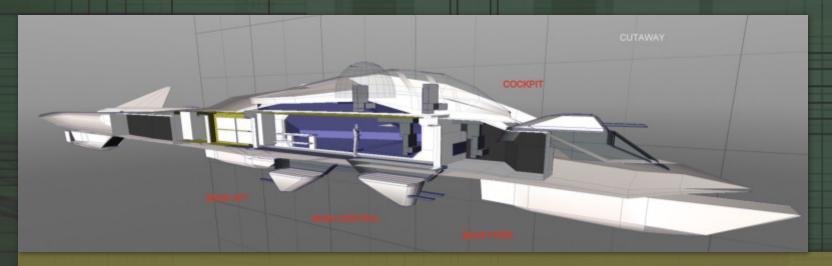
All other notes sound good. Yes, it's getting way too B-1, I'll get closer to the paintover aesthetic.

I will also distribute the players throughout the ship. I'll keep the top canopy for the pilot/copilot, which will make the canopy smaller but put other stations throughout the ship.

Also make all turrets manned.

And I'll switch the lift fans to VTOL jets.

CUTAWAY

COCKPIT

MAIN AFT

MAIN CENTRAL

MAIN FORE

12

WORK IN PROGRESS

Ryan: Two quick questions –

The canopy position on top of the fuselage means the pilot will have no downward visibility and bad visibility to the sides. I'm checking if that's OK. The further forward the canopy goes, the better the visibility. If it's on the tip of the nose it will have good front, side and down visibility.

Are there any bombs or missiles you want me to use in the model? Otherwise, I'll make them. Just wondering if I should be using a standard type – for instance, should I use the same missiles that are in the Idris?

Otherwise I'll make up a new bomb, use the Idris' missile, and make a new ship-to-ship torpedo.

It's now 75 meters long and I've repackaged the interior. Now all of the hallways are tall enough for a six foot guy to walk no problem – no crouching needed – including new corridors that go from the aftmost main floor to the topside aft guns.

Repackaged the bottom guns too, to fit a seated figure with decent visibility.

Distributed workstations throughout the ship. Canopy covers pilot/copilot navigator; on the main floor there are four workstations of various functions that I need to detail out and distinguish.

Illustrated is an idea where the seat behind the pilot on the top is a spherical gimbal seat that can be faced forward during cruise/navigation but can serve as a master 'targeting turret' during weapon deployment. It could be like the gunnery chair in the *Last Starfighter* movie, and all of the unoccupied guns could slave to wherever the gimbal chair is pointed. It could have a HUD and controls to gimbal. That chair could have a kind of spherical HUD or something so it can see targets below and 'through' the ship, as well for bombing sighting also.

NAVIGATOR/GUNNER?

PILOT

TOILET

BEDS

KITCHEN

EMPTY GENERAL BAY

STATION

STATION

[Images on these three pages]

I detailed the bomb/cargo bays. There is still a large door/window separating the central main floor from the side bays. There would be doors in the bottom of these bays.

You can see I've put in there a modular bomb cylinder or a cargo area.

You asked for passenger seating. Can you tell me how many seats you'd like? Airliner type seats? I can make a module so that the side bays are filled with airliner seats. If you want seats with a cargo or bomb loadout, I can find a place for them. Let me know how many you want in that configuration.

I've switched the VTOL jets from lift fans to forward and aft jets that pivot along with the midship four jets. These are atmospheric and vacuum jets and work for takeoff, landing and cruise.
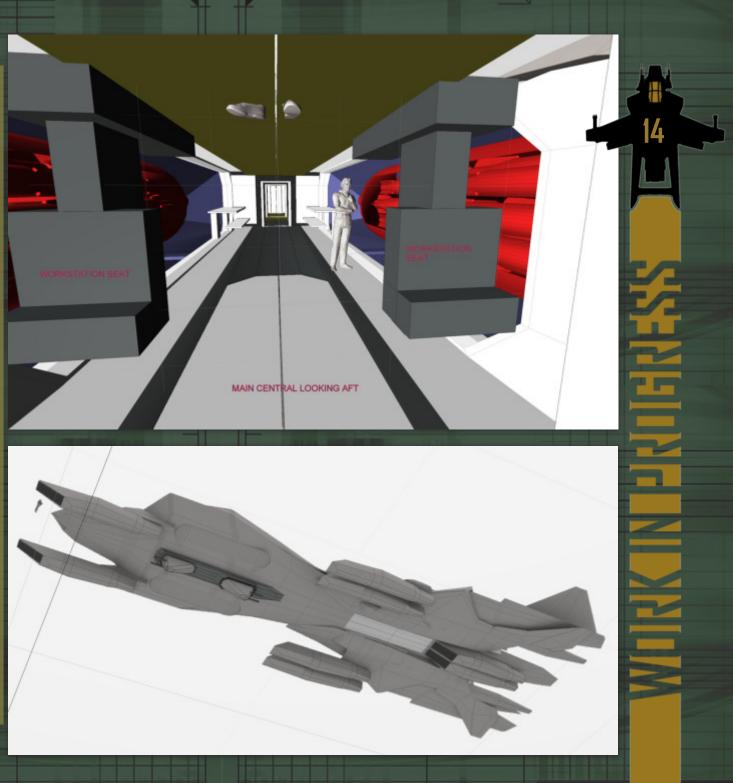
There are also a pair of warp jets that are fed by the large front intakes and come out the back in those new jets that you can see.

WORK IN PROGRESS

Ryan: Two more things:

The canopy has worse visibility than it might if it were closer to the front. As pictured, it has no downward visibility. This would be better if I moved it forward to the tip of the nose.

Are there any 'standard' missile and cargo sizes I should try to make work with this design? Pictured in the bomb bay is a 'bomb' design; for missiles I'll use the ones that are in the Idris and I'll come up with a new design for the big 'torpedo.'

Chris R: I really like the direction we're going.

I'm interested in seeing the cockpit much further forward — in fact, it looks like if you made the cockpit/canopy the base of the front turret and perhaps move the front turret back to where the cockpit is currently, that could be cool. In fact, you may want to consider extending the cockpit from where it is now down to the front gun, keep the cool command sphere (perhaps raised a bit) and then have the turret become rear facing right behind it for protection. (So the cockpit is kind of a two-level one — the front would be the pilot, the upper area would be radar/targeting/bombing control.)

MAIN CENTRAL LOOKING AFT

WORKSTATION SEAT

WORKSTATION SEAT

Chris R: I think the VTOL thrust jets are too big, especially the front ones. They could be half the size (they should definitely not protrude in front of the nose) and their rotation/attachment point needs to feel better integrated into the fuselage. (Right now I don't know that the front ones rotate 90 degrees!)
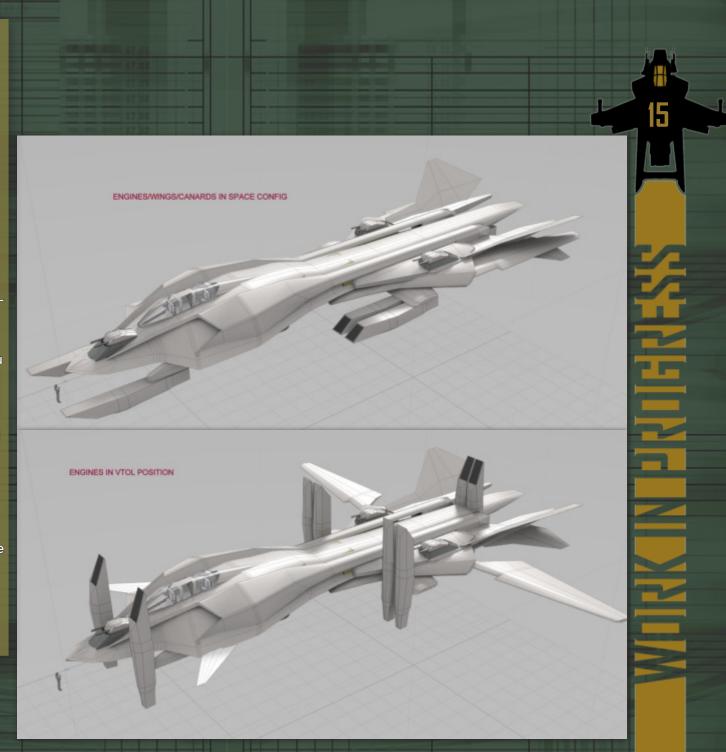
Swing wings seem a little thin/fragile at the pivot point – seems like they should be a bit wider/thicker there.

I like the swept back space configuration!

No standard missile design/size as of yet – knock yourself out! You should think about some standardized cargo space, though.

Ryan: I love the engines snug up to the cockpit, I'll go with that and make sure the visibility is good with the engines in cruise mode.

Yes, I'll definitely increase the size of the wing attachment point. The trick is making it work when fully swept, too. I'll make the wing have some moving parts that fill that space in as the wings swing out. I'll also give them flaps, slats and all that, along the lines of Chris's paint-over.

ENGINES/WINGS/CANARDS IN SPACE CONFIG

ENGINES IN VTOL POSITION

[Images on these four pages]

Ryan: I've addressed the notes in a rough way (except the wing attach points, which are still quite thin).

I rearranged the cockpit per notes.

Pilot now in extreme nose, good visibility down, sides, up.

Gunnery ball is up and behind, at the highest point on the fuselage for unobstructed visibility front and back. This is for controlling all the guns like we talked about, with a spherical gimbaled HUD *Last Starfighter* style.

Aft gun turret behind that.

I added top and bottom docking collars. These will retract into the fuselage when not needed. I have them both entering into the hypersleep bed room.

Refined bomb doors.

Shortened fore/aft cruise/lift engines.

Blocked in some crude landing gear representations: six skids.

Added interior blocking/detail.

Now has single pilot, single gunnery sphere, five gun turrets.
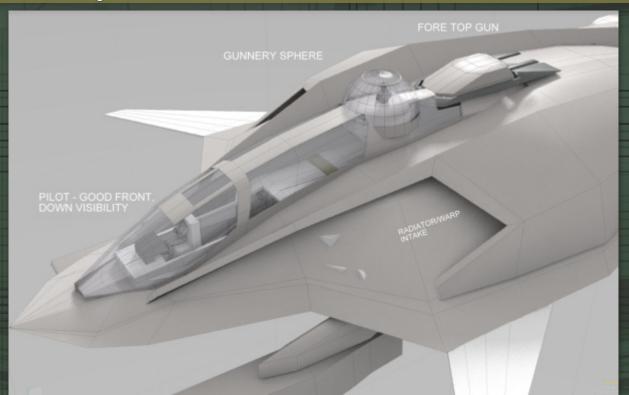
Navigator and flight engineer below and behind pilot.
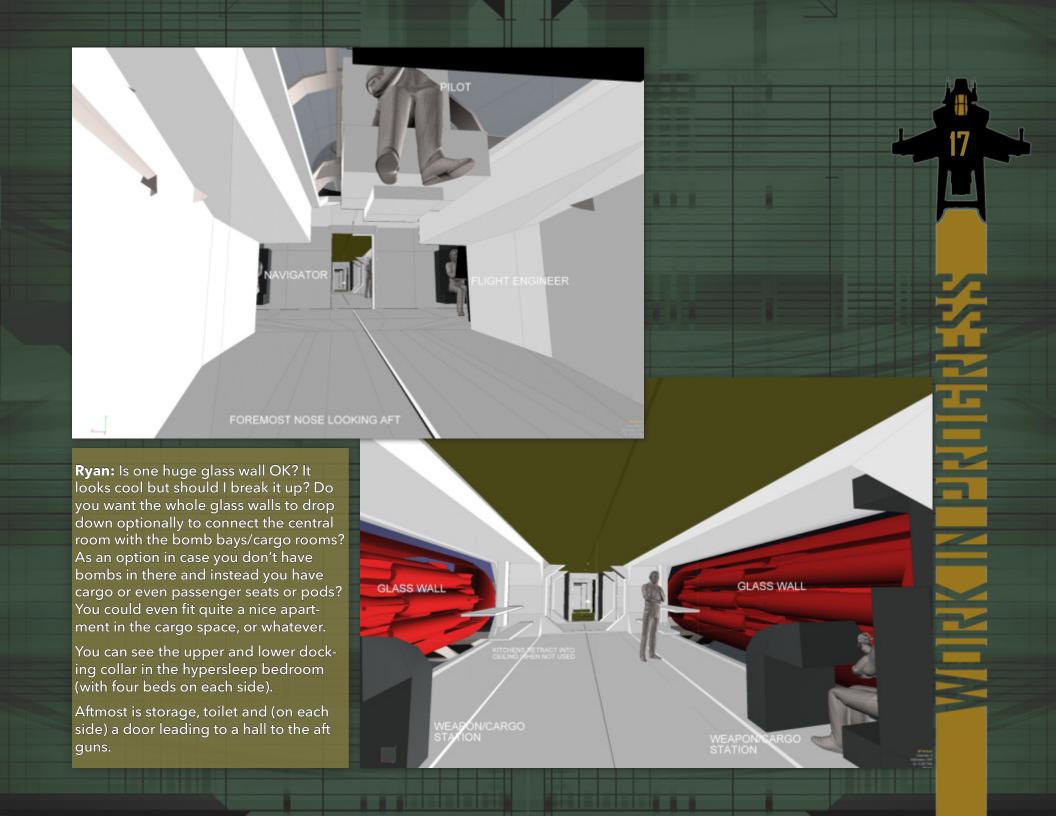
Twin aft facing weapon/cargo stations next to the bomb bays.

Big glass wall separating the bomb bays from the central room.

A small kitchen stows at the ceiling and drops down for use, similar in concept to that in the Constellation.

Behind the kitchens are doors on either sides – big air-locks that connect the central room to the bomb bays/cargo bays.

GUNNERY SPHERE

FORE TOP GUN

PILOT - GOOD FRONT, DOWN VISIBILITY

RADIATOR/WARP INTAKE

PILOT

NAVIGATOR

FLIGHT ENGINEER

FOREMOST NOSE LOOKING AFT

Ryan: Is one huge glass wall OK? It looks cool but should I break it up? Do you want the whole glass walls to drop down optionally to connect the central room with the bomb bays/cargo rooms? As an option in case you don't have bombs in there and instead you have cargo or even passenger seats or pods? You could even fit quite a nice apartment in the cargo space, or whatever.

You can see the upper and lower docking collar in the hypersleep bedroom (with four beds on each side).

Aftmost is storage, toilet and (on each side) a door leading to a hall to the aft guns.

GLASS WALL

GLASS WALL

KITCHENS RETRACT INTO CEILING WHEN NOT USED

WEAPON/CARGO STATION

WEAPON/CARGO STATION

WORK IN PROGRESS

Ryan: If all looks OK, I will start to detail it out, interior and exterior. Are we missing any interior/exterior spaces/stations/functionality?
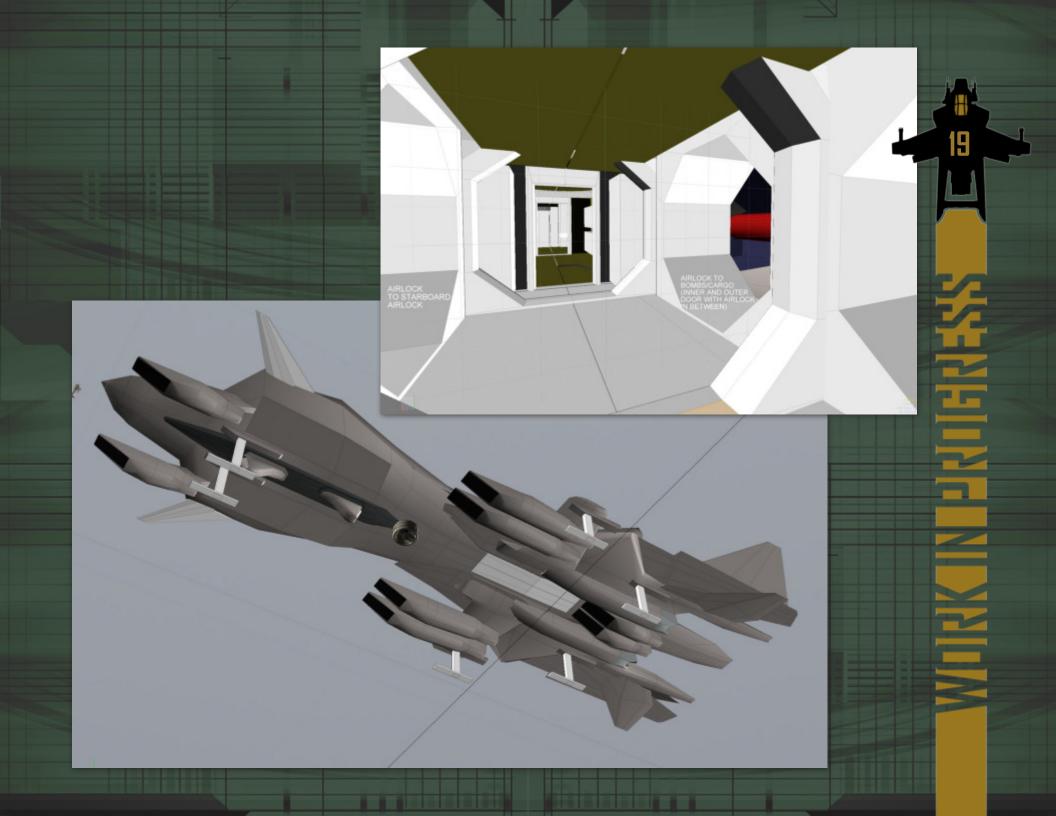
Chris R: Looks good to me.

A couple of notes:

Engine nacelles (especially in the front) still feel a little long and look unwieldy when rotated 90 degrees.

I would have the front landing skids a little further back and maybe a little larger footprint on the rear ones.

BOMB/CARGO

CORRIDOR TO AFT GUN

CORRIDOR TO AFT GUN

BELLY DOCKING COLLAR

AIRLOCK TO STARBOARD AIRLOCK

AIRLOCK TO BOMBS/CARGO (INNER AND OUTER DOOR WITH AIRLOCK IN BETWEEN)

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WORK IN PROGRESS

[Images on these four pages]
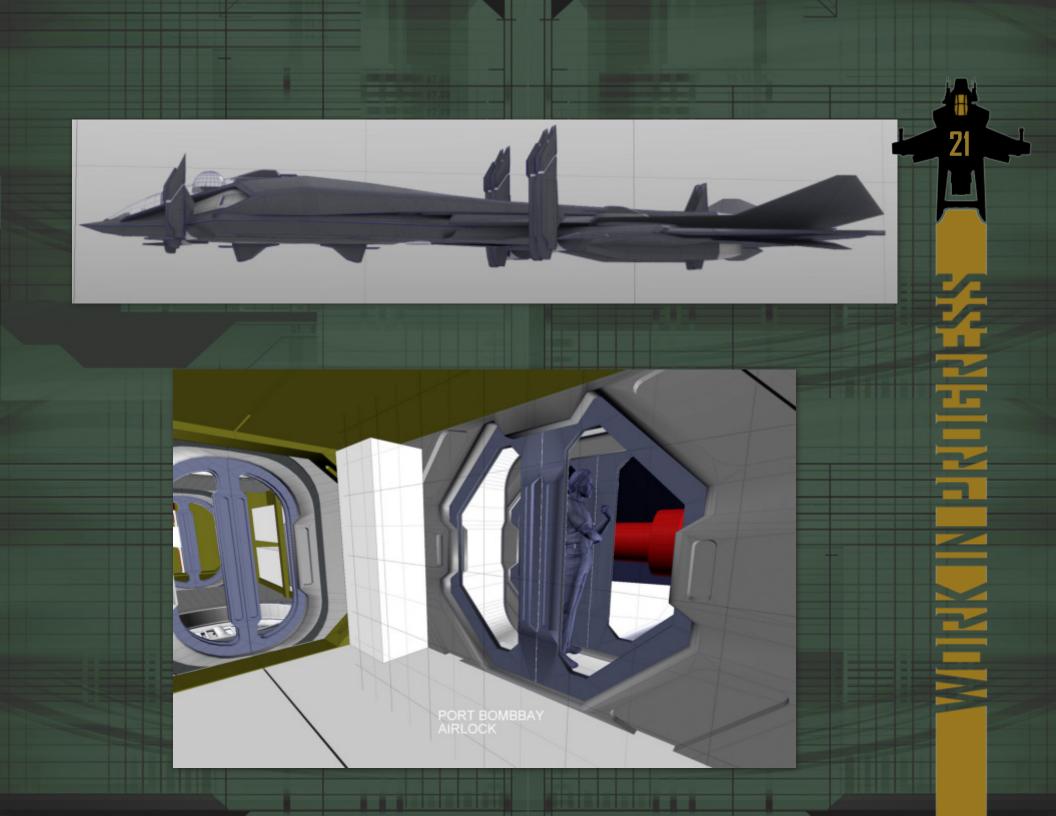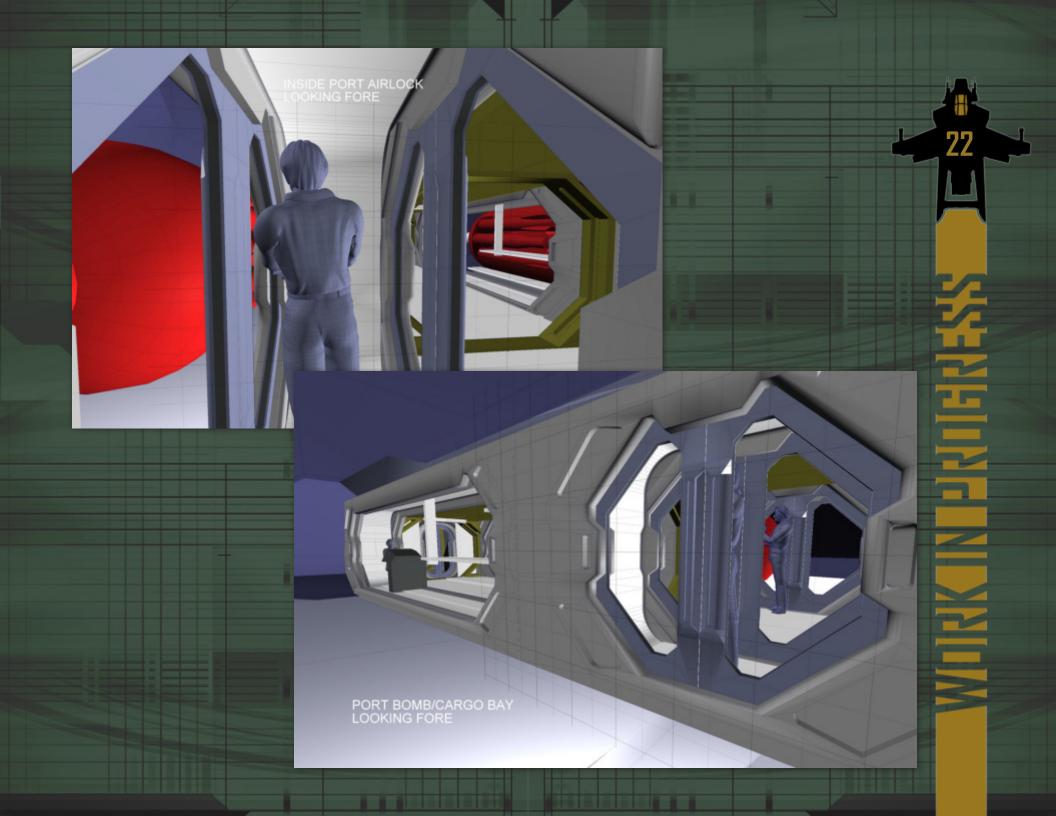
Ryan: Overall detailing and revisions per last notes:
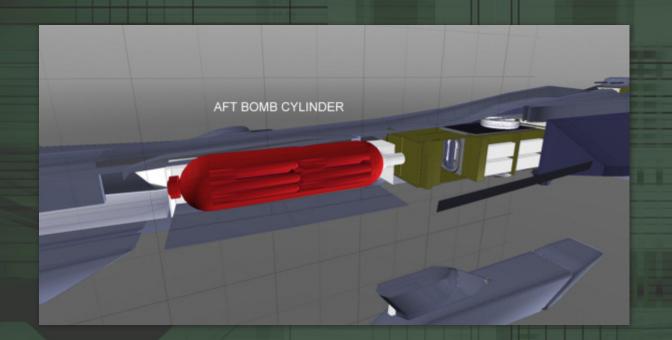
- Smaller engines overall, and I worked on the pivot mechanism.

- Added bomb cylinder to rear bay.

- Continuing interior detail, bulkheads, doors, halls.

- Detailed airlocks to bomb/cargo bays on either side.

- Integrated docking collars to interiors; I will add a sliding floor to cover the bottom one.

Will continue to detail out.

PORT BOMBBAY
AIRLOCK

WORKINPROGRESS

INSIDE PORT AIRLOCK
LOOKING FORE

PORT BOMB/CARGO BAY
LOOKING FORE

AFT BOMB CYLINDER

AFT ROOM LOOKING AFT

Ryan: You'll see that I've reconfigured the top part a little bit in order to get the gyro HUD at the highest point for the absolute best possible visibility.
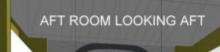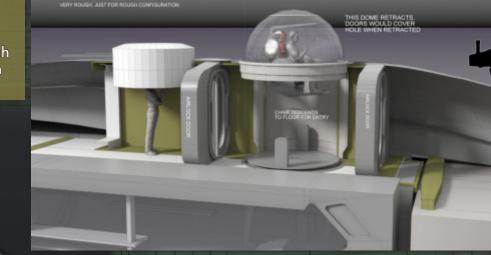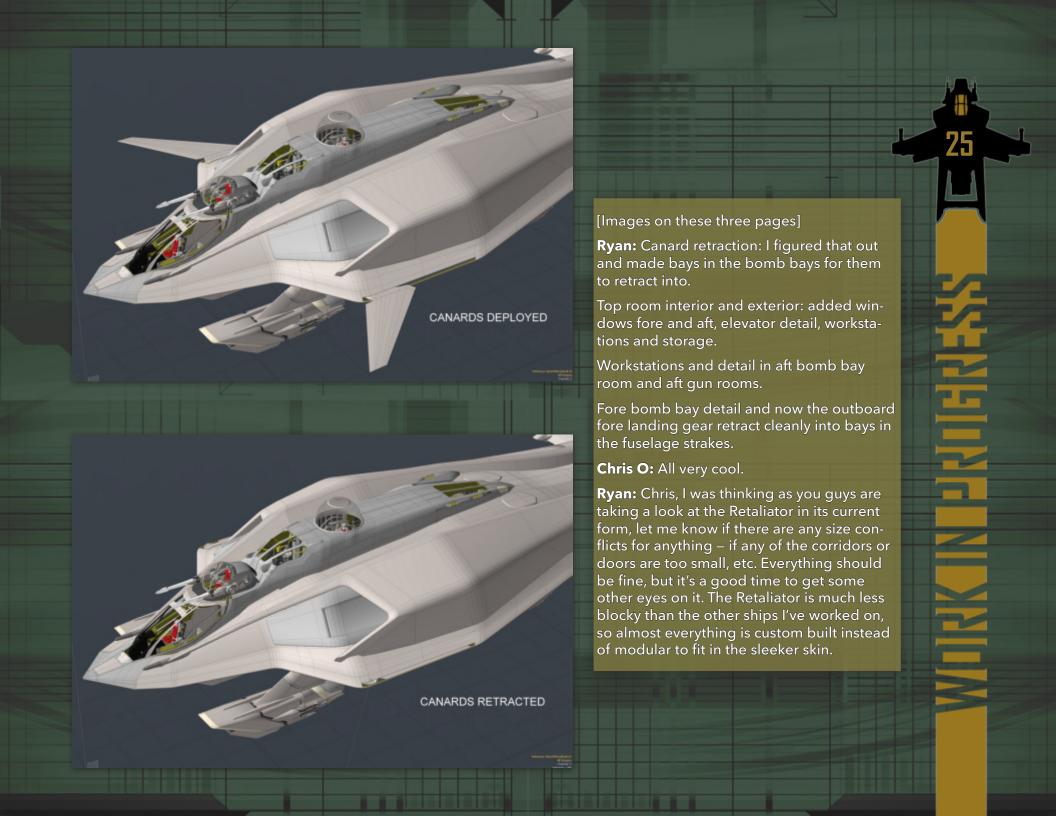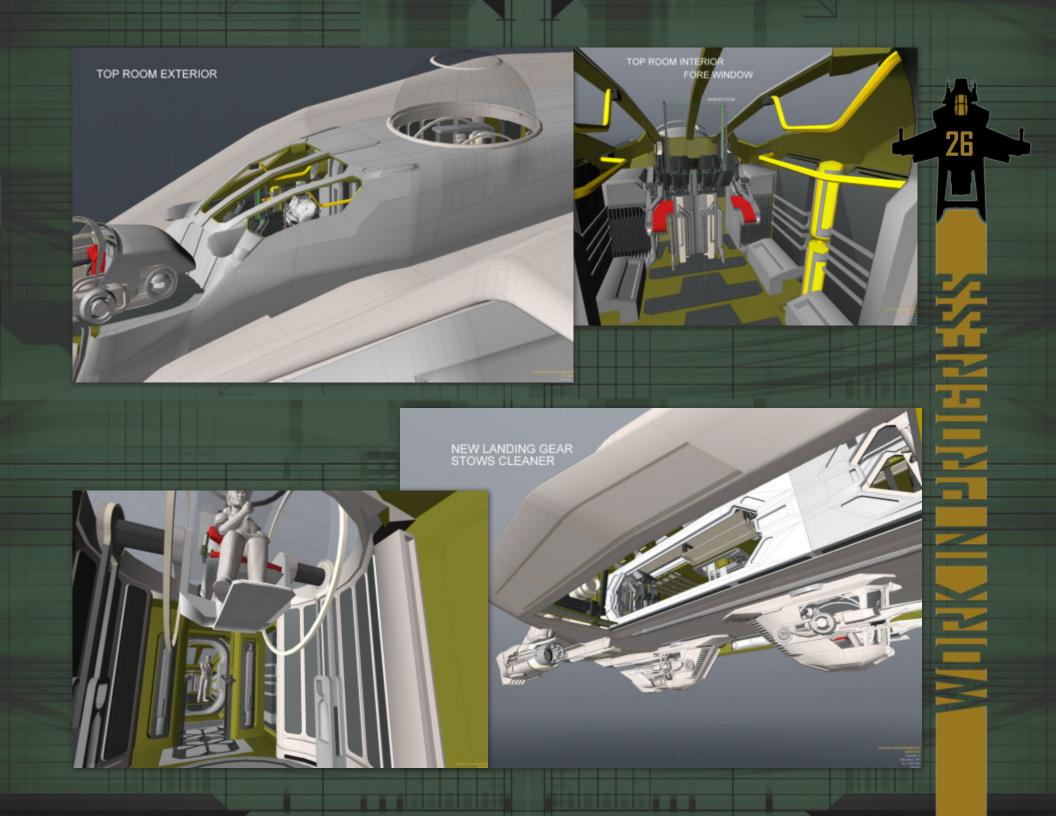
I've opened up the room the gyro HUD is in and reconfigured the gun turret behind it. It's really rough now, but I'm going for a bit of a lower profile design for it.

VERY ROUGH, JUST FOR ROUGH CONFIGURATION

THIS DOME RETRACTS. DOORS WOULD COVER HOLE WHEN RETRACTED

AIRLOCK DOOR

AIRLOCK DOOR

CHAIR DESCENDS TO FLOOR FOR ENTRY
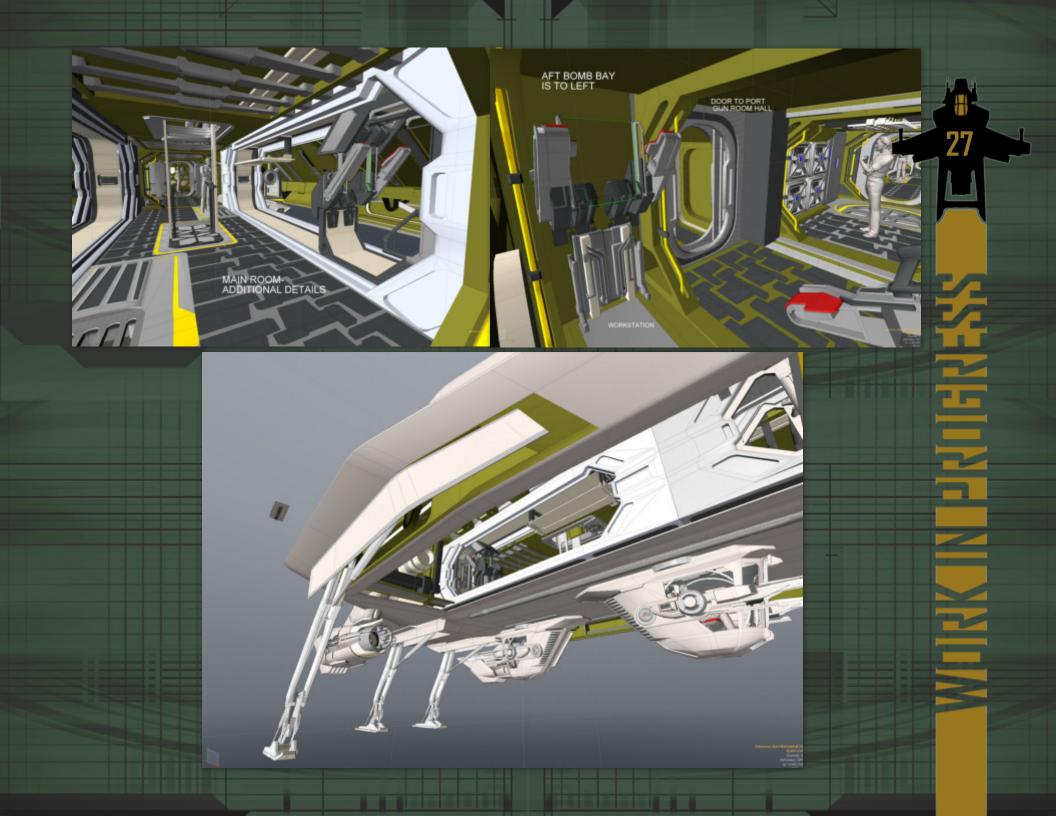
I need to get stairs or a ladder up to the upper floor.

ROUGH-

GYRO HUD IS AT TALLEST POINT FOR BEST POSSIBLE VISIBILITY

LOWER PROFILE UPPER GUN (JUST BLOCKED IN)

WILL BUILD IN MORE STRUCTURE TO THE CANOPY

CANARDS DEPLOYED

CANARDS RETRACTED

[Images on these three pages]

Ryan: Canard retraction: I figured that out and made bays in the bomb bays for them to retract into.

Top room interior and exterior: added windows fore and aft, elevator detail, workstations and storage.

Workstations and detail in aft bomb bay room and aft gun rooms.

Fore bomb bay detail and now the outboard fore landing gear retract cleanly into bays in the fuselage strakes.

Chris O: All very cool.

Ryan: Chris, I was thinking as you guys are taking a look at the Retaliator in its current form, let me know if there are any size conflicts for anything — if any of the corridors or doors are too small, etc. Everything should be fine, but it's a good time to get some other eyes on it. The Retaliator is much less blocky than the other ships I've worked on, so almost everything is custom built instead of modular to fit in the sleeker skin.

TOP ROOM EXTERIOR

TOP ROOM INTERIOR
FORE WINDOW

NEW LANDING GEAR
STOWS CLEANER

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WORKINPROGRESS

MAIN ROOM-
ADDITIONAL DETAILS

AFT BOMB BAY
IS TO LEFT

DOOR TO PORT
GUN ROOM HALL

WORKSTATION

WORKINPROGRESS

MISC SMALL EXTERIOR DETAILS

WING SWING MECHANISM

[Images on these three pages]

Ryan: Lots of small exterior details:

- Wing swing mechanism and flap-aileron articulation.

- Blocked in low-res versions of two options we discussed early on, with both optional payloads in the bomb bays:

  - A retractable forward firing gun — could be a beam weapon or something more exotic, a recoiling howitzer or something?

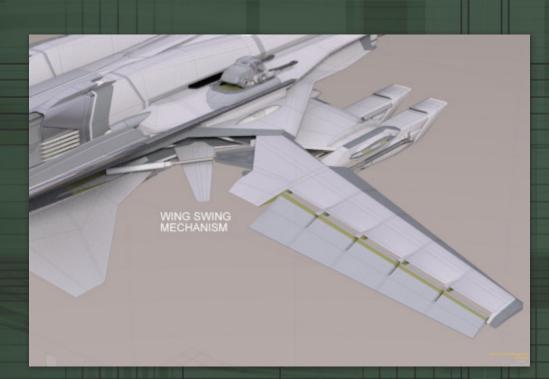 - The other is an apartment module that fits into a bomb bay. It's got a relaxing area with couch and entertainment, and a bedroom with another holograph screen. I'm really hoping to squeeze a shower/toilet in here too.
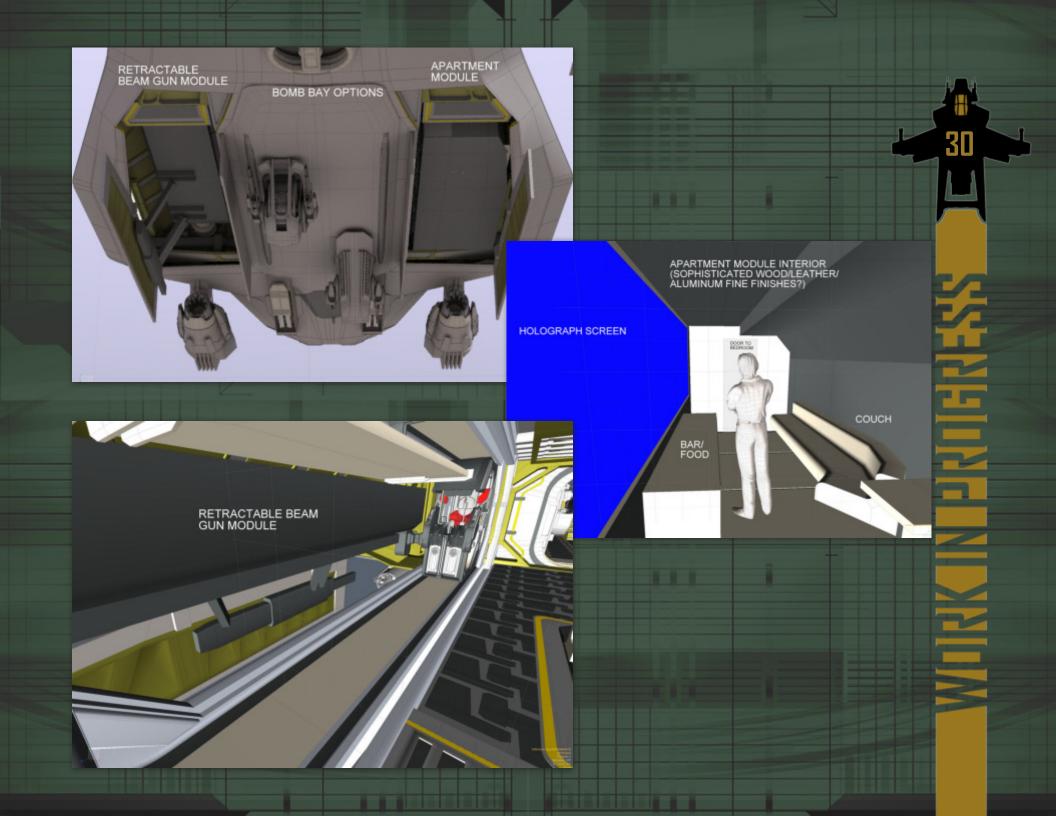
    I was thinking that this interior could be uber-high end, with leather, wood and brushed aluminum, kind of like a Bentley interior crossed with a five star hotel room (a very small hotel room but still ...).

Chris R: Looks great — upgrade for the apartment module!!!

Chris O: Can't that retractable gun be a big rail gun like the one on the navy ship in *Transformers*?

Ryan: Cool, I'll make it one of those rail guns. Actually, I designed the one in *Transformers*. (It's the one in *Trans 2*, right? Shoots at the guy on the pyramid? Those images are on my website.)

MISC SMALL DETAILS-
EXHAUST SUPPRESSORS
RADAR WARNING ANTENNAE
ETC

TOP RADAR PANELS

FWD RADAR
PANELS

RETRACTABLE BEAM GUN MODULE

BOMB BAY OPTIONS

APARTMENT MODULE

HOLOGRAPH SCREEN

APARTMENT MODULE INTERIOR
(SOPHISTICATED WOOD/LEATHER/
ALUMINUM FINE FINISHES?)

DOOR TO BEDROOM

COUCH

BAR/FOOD

RETRACTABLE BEAM GUN MODULE

WORKING PROGRESS

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FRONTROOM LOOKING FORE

FRONTROOM LOOKING AFT

[Images on these two pages]
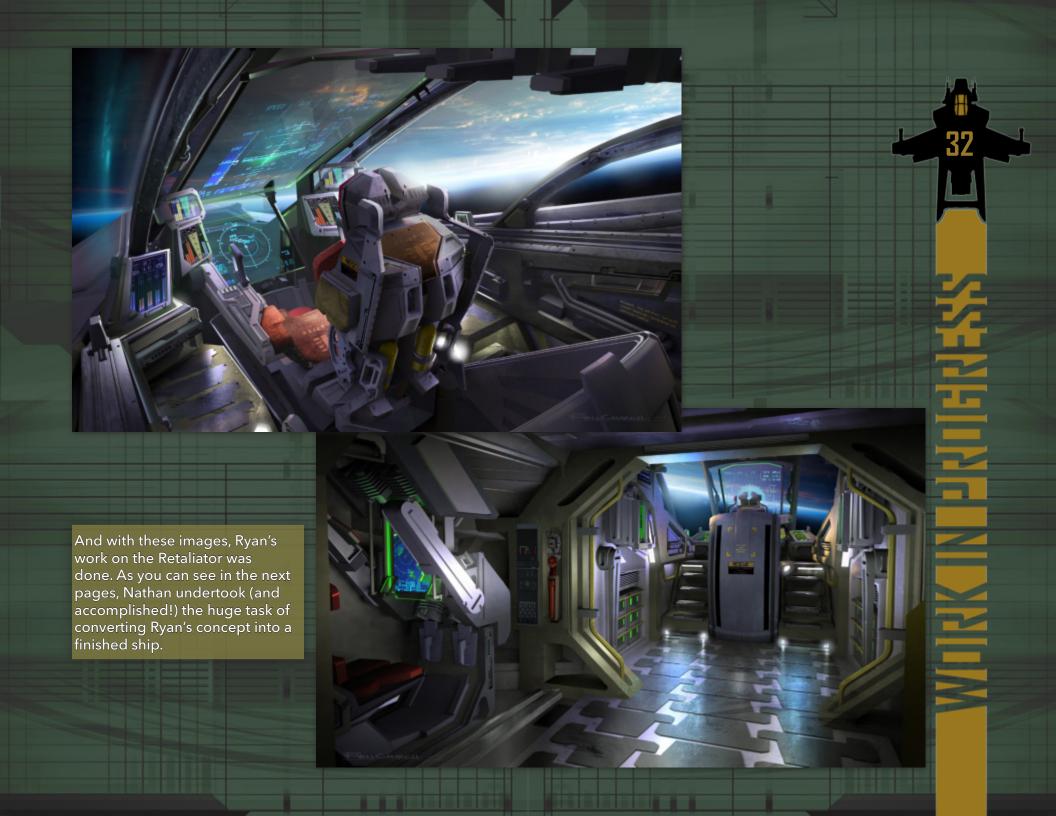
Ryan: Chris, attached is the work on the Retaliator cockpit.
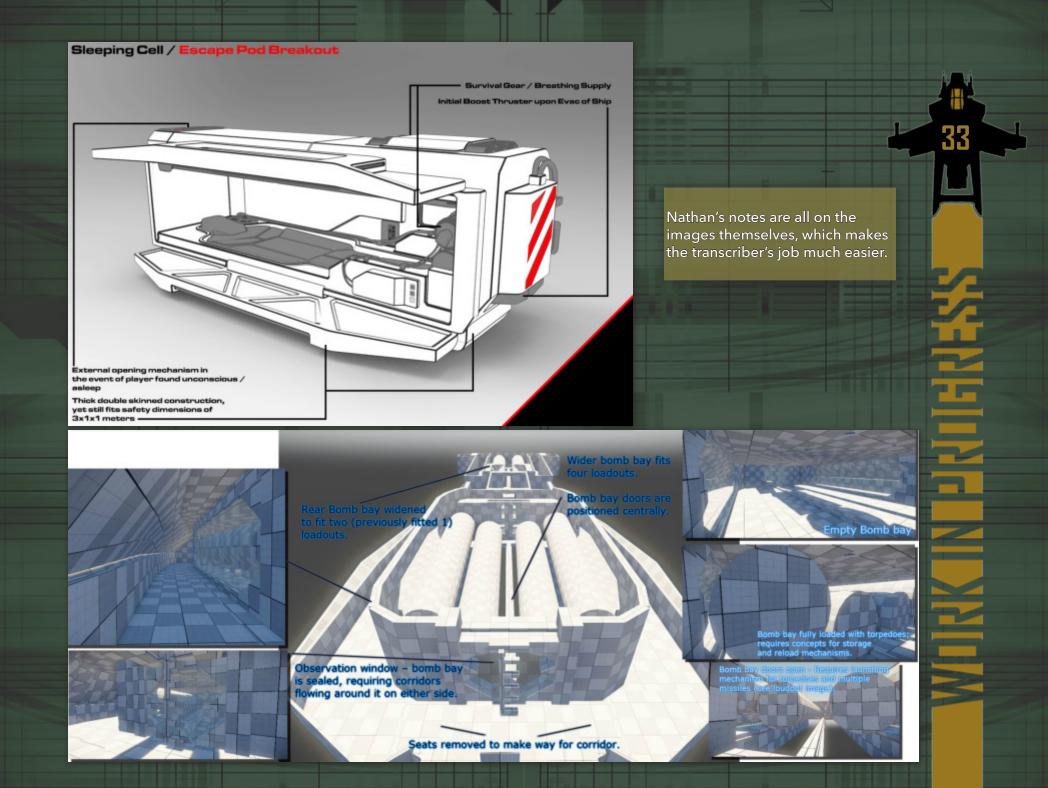
You can see that there's a central cockpit in the nose with one chair, a giant HUD up in front and a smaller one down below. Displays on either side, stairs on either side.
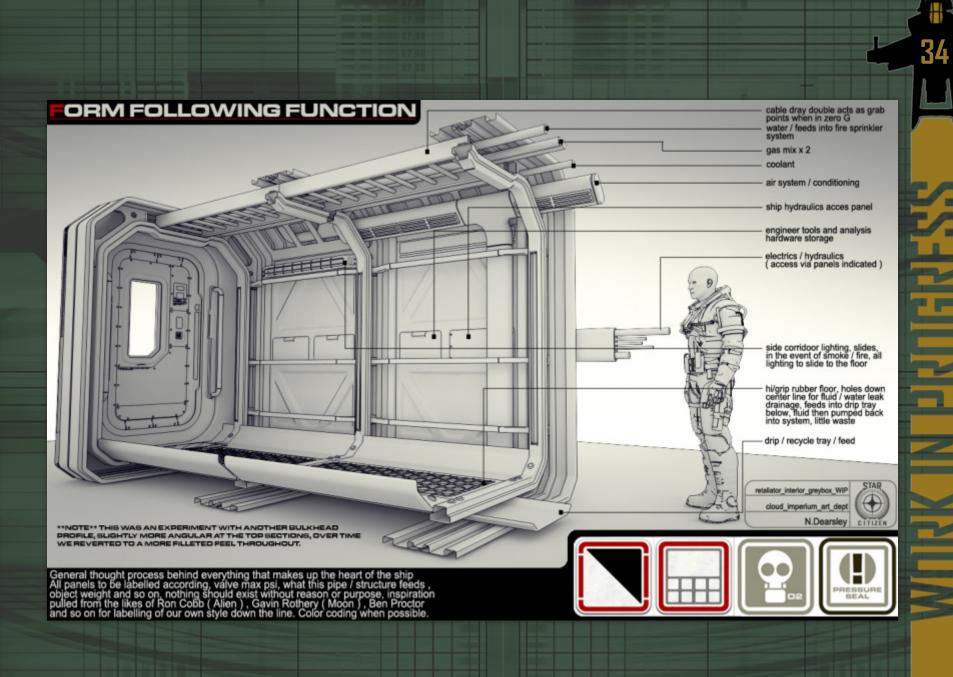
Also I detailed out the room immediately behind the seat, with banks of black boxes and stuff.

COCKPIT LOOKING AFT

WORK IN PROGRESS

And with these images, Ryan's work on the Retaliator was done. As you can see in the next pages, Nathan undertook (and accomplished!) the huge task of converting Ryan's concept into a finished ship.

Sleeping Cell / Escape Pod Breakout

- Survival Gear / Breathing Supply
- Initial Boost Thruster upon Evac of Ship

External opening mechanism in the event of player found unconscious / asleep

Thick double skinned construction, yet still fits safety dimensions of 3x1x1 meters

Nathan's notes are all on the images themselves, which makes the transcriber's job much easier.

Wider bomb bay fits four loadouts.

Bomb bay doors are positioned centrally.

Rear Bomb bay widened to fit two (previously fitted 1) loadouts.

Empty Bomb bay

Observation window – bomb bay is sealed, requiring corridors flowing around it on either side.

Bomb bay fully loaded with torpedoes; requires concepts for storage and reload mechanisms.

Bomb bay doors open – Requires launching mechanism for torpedoes and multiple missiles (see loadout image).

Seats removed to make way for corridor.

33

WORKINPROGRESS

FORM FOLLOWING FUNCTION

cable dray double acts as grab points when in zero G

water / feeds into fire sprinkler system

gas mix x 2

coolant

air system / conditioning

ship hydraulics acces panel

engineer tools and analysis hardware storage

electrics / hydraulics (access via panels indicated)

side corridoor lighting, slides, in the event of smoke / fire, all lighting to slide to the floor

hi/grip rubber floor, holes down center line for fluid / water leak drainage, feeds into drip tray below, fluid then pumped back into system, little waste

drip / recycle tray / feed

retaliator_interior_greybox_WIP

cloud_imperium_art_dept

N.Dearsley

STAR CITIZEN

NOTE THIS WAS AN EXPERIMENT WITH ANOTHER BULKHEAD PROFILE, SLIGHTLY MORE ANGULAR AT THE TOP SECTIONS, OVER TIME WE REVERTED TO A MORE FILLETED FEEL THROUGHOUT.

General thought process behind everything that makes up the heart of the ship
All panels to be labelled according, valve max psi, what this pipe / structure feeds, object weight and so on, nothing should exist without reason or purpose, inspiration pulled from the likes of Ron Cobb (Alien) , Gavin Rothery (Moon) , Ben Proctor and so on for labelling of our own style down the line. Color coding when possible.

O2

PRESSURE SEAL

34

WORKINGPROGRESS

Landing gear deployed

Whitebox design layout, art notes in white, where it all starts!

Bomb Bay - Front

Upper Rear Turret Access

Bomb Bay - Rear

Upper Front Turret Access

Engineer Station
Can we get the Engineer station broken our into its own room? Breaks flow.

Far too much going on here within a very small space, will become confusing to player and difficult to make sense of it art wise

These turret locations are cool, but feel like a dead end , scope for coridoor loop here?

Lower Front Turret Access

Upper & Lower Docking Ring
metrics required for these, scope for main player lifts?

Cockpit / Pilot's seat

Lower Middle Turret Access
Turret access in the middle of four routes not great for the player

External Ladder Access Hatch
one ladder to enter / exit the ship is not enough / slow, adds to built up area, lets work out a solution asap

Side Access Corridors
A little wide right now, curves are cool!

Deck B whitebox layout

Scope to move this? Tie in with another console? , whats the mechanics of this station

Bomber Station & Observation Turret

Ladder Access to lower deck

NOTE: A console has been removed from this location in order to make way for the ladder access.

Ladder access is required here due to the old location being positioned within where the bomb bay is now located.

Wasted Space here, will investigate either sleeping quarters or excape pods, may be possible to do both

Deck B / Final layout

Area furthest back re-factored for sleeping pods that double act as escape pods in the event of an emergency

Crew weapons storage added, fold away units into wall, movement where possible

Turret access here to new turret location pulled away from cokpit area

Exposed bulkheads that follow the Do's / Don't sections, Number and scale of bulkheads dependant on the scale of the ship, smaller ships = smaller bulkheads but more of them,(rib like)
Larger ships, go more towards the Larger Bulkheads, but less of them, more of a defining feature of interior profiles.
Pretty much everything in the interior spaces should in some way 'attach' to the bulkheads imo.

Ceilings (main source of light @ front, less so @ rear)
rear (smaller light sections, dappled where possible, atmospheric, volumetric, player should almost be able to smell the air, taste it)

front (ambient, clean, directional)

Create dappled light creatively, cover running ceiling lights with simple clean lines.

Thick bulky forms around entrances and exits, adds weight / volume

Larger forms to fill in detail, avoid too many small ' noodly' stuff, expose this, don't cover

Larger, softer bevels and fillets, especially on cross sections, try and avoid the 45 degree cliche.

Rules / Guidelines

Do's:
Round corners of wherever possible.
Over-exagerate fillet radius's on cross sections
expose bulkheads, dont cover, this is suppose to mimic an older ship / submerine
deep extrussions with wider angles going in/out, adds further depth/weight to sections
Create areas for the eye to relax, try and make this work with the overall shape of the room, subconcious guides, lots of detail lis nice, but there is a fine line where it just becomes pointless / tickbox art dev.

Don'ts
Cake everything in greebles, if required, make a feature of this, theme it etc, as I'm trying to do at the rear of the ship to push more of an engineering feel
NO HEXAGONS!
Bolts / rivots minimal use, only where it makes sense, this could be a feature of a certain manufacturer, plus we're not making Warhammer.
Cover built up detail with girders unless on floor areas, try and frame these/ over expose them.

color plan

front   rear

	Geometry Breakdown	
Cleaner lines, all noisey form confined to ceiling as per submanive / naval	Geometry Breakdown	Far more surface breakup, greeble/noisy forms take place all over, Floors remain clean where possible.
Clean, low contrast, make more use of form	Shader Breakdown	Subtle dirt/dust buildup, higher frequency gloss
cold, large / fewer light sources	Lighting breakdown	warm, multiple, smaller light sources

Callout white gears from dark skin

started base shaders – tally

ND-1146

38

A

B

C

D

Entering the cockpit sequence

WORKINPROGRESS

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FINAL CONCEPT GEOMETRY

HALL TO PORT
AFT GUN

80 PERCENT FINAL GREYBOX INGAME / PLACEHOLDER LIGHTING

40

WORK IN PROGRESS

Whitebox / initial design draft

Awesome, feels far more tangible

Bomb bay moved to the centre of the ship to avoid the path of the VTOL.

External ladder access to the ship to allow multiple crew to board faster.

This is not enough access for max crew at once, will be slow, thoughts?

Final Geometry

Bomb bay access doors

Central Section Callout / Whitebox

we have essentially 5 player routes
all merging in this single space, needs to be
opened out slightly if possible

Turret access here will not work, too close
to Bomb Bays / Confusing, also will obstruct
clean docking ring proceedures

Doors opening and walking straight into
a wall we need to avoid, more consideration
to player movement and flow

Cab module

Universal Turret
chair OS

Lower Middle Turret Access:
Chair raises when 'used', then descends
back into the turret once the gunner
sits down

Final

AEGIS DYNAMICS
AEGIS
AEGIS

Doors introduced at 45 degrees where possible,
more interesting, easy to navigate

A UECL

A

Wall section knocked through / opened out,
Introduces some space around the area,
making all entrances and exits visible to player
upon entry from any angle

Initial concept for Turrets / Max Viewport

Good initial functionality, although feels slightly too chunky compared to other AEGIS products - artist to pull back towards the style of the rest of the ship and additional AEGIS products

Final ingame

Thicker construction of main pilars, these do not obstruct the player vision

Clutter / Greebly geometry removed

Front facing curve sloped more in tone with existing cockpit glass / screen

Final Interior Layout Lower Deck / most changes on layout made during progression of the Greybox phase

One turret entrance before reaching cockpit, less cluttered,
turret entrance closes with walkover bridge for players to walk
over when in operation

Access to top deck pulled further back for cleaner navigation around area

Captains own sleeping quarters added

Crew hygiene area added

Rear lower turret added, also creating coridoor loop as requested at 'Whitebox'

Engineering control room / self contained

Entrance boasts 2x 4 man lifts, whole crew can enter and exit at once, the entrance
player rounted re-factored to become choke points whilst being boarded by unfriendlies

Balancing Textures / Shaders

As with all our assets now, they must hold up under multiple lighting scenarios.
To acheive this during the dev of the Retaliator we fine tuned a PBR test scene.
Whilst running this scene you can at the press of a button cycle through multiple
lighting scenarios (which we can add to as we progress), to ensure your shaders
light correctly under these conditions.
We tried to come up with the most common scenarios as seen below.

Mid Day / clear sky, strong direct light

Sunset / Strong saturated direct light,
lower ambient / bounce

WORKINPROGRESS

Space / Strong Bleached direct light from sun
or star, little to no ambient above, blue / purple
underside bounce to mimic planet bounce light
if required

Overcast / Ambient only light from above

Night / Medium direct light with stronger spec values.
Very little / dark bounce

THUNDERING THORSHU

78TH SQUADRON

47

PHOENIX

While Squadron 78's recent victories have captured the public's imagination, the unit has a long and storied past that reaches back to the final days of the Messer era. Established on 2604-02-22, Squadron 78 was created as part of the Empire's response to the initial battles of what would come to be known as the Second Tevarin War. Strike squadrons were seen by many as the ultimate symbol of Messer's power. Afterwards, while many squadrons were being retired or restructured, Squadron 78 managed to survive intact due to their distinguished actions in the post-war years. The result has been a bomber squadron still flying the modern version of the hardware they were assigned over three centuries ago, still active despite living through a series of complex political transitions that even at one point lead to the entire unit being arrested.

An Unusual Name

The unit was first assigned to a now-defunct space forces training facility at Ankorum on Terra's northern hemisphere. It was here that the unit's crews and ground personnel underwent six months of Retaliator-A familiarity and transition training before deployment against the Tevarin, and it was here that they acquired their unusual moniker, the "Thundering Thorshu."

At the time, the bomber field at Ankorum was as close to the middle of nowhere as was possible in civilized space, an unpopular assignment for a generation of military personnel eager to save the galaxy by battling aliens on the front line. Squadron 78's first commanding officer, Captain Jaso Iger, realized that he could use the brand new spacecraft he had been entrusted with to ingratiate his team to the weary base personnel. For the first three months of training, he would commission one of his pilots to covertly fly luxury foodstuffs and other items from the planet's southern regions back to the base. Hailed by all for providing these creature comforts, the phrase "having

a 78" briefly came to use amongst navy starmen as an expression for having a lavish meal. This all came to a halt when the Retaliator transporting contraband suffered a flame-out during a landing approach. The tower quickly ordered the crew to dump their fuel and dummy munitions in preparation for a crash landing. The order was followed, sending the illicit goods stored in the bomb bay falling around the airbase: two tons of fresh Thorshu crab legs. With that, the squadron's name was established and a three hundred year legacy of seafood-oriented intra-service jokes was born.

Wrapped in Glory

As would be expected, Squadron 78's first combat came in the Second Tevarin War, where they earned multiple combat awards while racking up capital ship and space-to-space kills during the lengthy conflict. In the years following, the squadron continued to see service in a range of capacities, including heavy anti-piracy interdiction and as part of the Messers' political intimidation machine.

Squadron 78 assured their survival during a seemingly insignificant mission in early 2791. As Messer XI's hold on the population began to falter, bomber squadrons found themselves tasked with increasingly dubious missions. Units that had spent their careers flying against pirate bases and external threats found themselves reassigned to core worlds and assigned the eliminating political dissidents or subduing rioting populations. In one such instance, the Thundering Thorshu were ordered to equip double-loads of antimatter torpedoes and destroy an inhabited moon in the Ferron System believed to be the hiding place of a cadre of radicalized rebels.

As a matter of official record, the squadron was tasked with a kill-order strike on a suspected insurrectionist training facility. After a four-hour run from the jump point,

the Retaliators entered scan range of Ferron's moon. What they discovered was hardly the haven of cutthroats and anarchists that had been presented in their briefing, but rather an agro center on a small moon that had no weapons and no ships, but plenty of inhabitants.

Commanding officer Lisa Cahillier was contacted by her superiors who requested a progress report. None of her pilots could find any evidence to mark the base as a threat. Cahillier defied mission protocol and contacted the base directly and ordered them to surrender their weapons. They responded with pleas; the base was settled as a home for ex-patriots hoping to escape the ongoing chaos, not as a base for militant revolutionaries. They numbered in the tens of thousands, all marked for death.

Cahillier commed back to report her findings and recommend a mission abort citing a lack of a legitimate target. Her superiors were incensed and repeated their order for the 78th to open fire on the target. The squadron held their ground, refusing to fire without a clear or confirmed tactical or military target.

The commander of the battle group, Admiral Lorna Gestala, intervened on the comms, giving a final declaration for the 78th to annihilate the target.

Cahillier ordered her group to fire, but targeted an asteroid beyond the agro center. The moon's inhabitants watched the torpedoes sail harmlessly overhead and obliterate the distant target.

The bombers made the long, silent flight home to face certain court martial and inevitable execution. On landing, officers were taken away in restraints and enlisted men were confined to quarters on base. All indications are that

Messer XI intended to make an example of this group of traitors when doing so would be politically expedient. Luckily, this never came: the squadron spent roughly 18 months in the stockade and then were freed as heroes by the incoming government. Squadron 78 was re-established, presented as a symbol of enduring humanity in the face of the most tyrannical orders from the fallen Imperator.

Behind the Scenes

Squadron 78 is best known to the public today for their part in Operation Unilateral Force, a 2940 effort aimed at inciting Vanduul infighting by targeting a single clan's line of battle. Through these surgical strikes, the hope was that the weakened clan would then become a target for other Vanduul; diverting attention and resources from UEE space while inflicting further ongoing losses on the various clans involved. While the operation failed to generate the internecine conflict that xenopsychological operations predicted, the 78th took part in a major strike that resulted in the crippling of an enemy Kingship.

An embedded reporter, Felix Terwyn, followed the squadron during their training operations at MacArthur and then through the three-week deployment at forward operating base Cernan that ended in the epic final attack. Felix saw to it that the squadron's torpedoes were all equipped with cameras that provided a unique perspective, not only into the nature of war, but a seldom seen up-close view of the Vanduul threat itself. The resulting news stories made brief celebrities of the pilots involved, identifying them as the cream of the crop of the UEE's bomber corps.

GRANNY

SUNGLASSES

V-NECK

RACING

BATTLE HELMET

LEATHER

CHAPS

TRAIL RUNNING

BATTLE HELMET
HEADWEAR

Lorem ipsum dolor sit amet, consectetur adipi-
scing elit. Aenean sodales mi id erat placerat
consequat. Pellentesque sit amet enim

OUTFITS

The Racer

NEXT OUTFIT

OUTFIT LIST

SAVE CURRENT OUTP...

TAG AS FAVORITE

50

USER INTERFACE DESIGN

ETIENNE: CLOTHING & EQUIPMENT DRAFT

Game Design 101: the User Interface (UI) is how information is transmitted to the player from the game, and vice versa. It is an information bridge that connects the player to the game. In Star Citizen, the UI includes things like the Visor Heads-up Display (HUD) on a ship, the pause screen, the scoreboard at the end of an Arena Commander match, and even the buttons on an elevator. It's what you, as a player, need to be able to play the game in a way that makes sense to you.

This month we're talking with the folks, spread across four studios, who design the interfaces for the Star Citizen universe.

JP: *To get us started: what is your title, and what do you do for Star Citizen?*

Zane Bien, CIG-LA: I'm a User Interface Designer for CIG LA and I design and implement in-game interfaces as they relate to ships (HUDs, display screens, etc.).

Gavin Bird, F42: I'm a 2D/UI Artist here at Foundry 42/CIG UK, and I design and create user interfaces, screens, icons, logos, decals, fonts and such.

Etienne Beaulieu, Behaviour: I'm a UI designer at BHVR. I develop the visual mobiGlas style, and integrate it in game. I also design various UI interfaces found in the PU, (jukebox, elevator console, etc.). I do a lot of visual work relating to in-fiction brands and presentation.
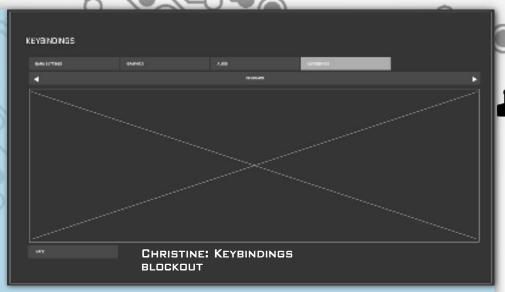
Michael Scala, Illfonic: I'm a UI/ 2D artist working on the FPS HUD, as well as contributing to various UI tasks for the project as needed, such as logo design.

Christine Marsh, Behaviour: I'm a Lead User Interface Designer at Behaviour Interactive. I've mostly worked on the *Arena Commander* sim interface, the redesign of the pause screen, flair items, decals, logo design, etc., but I also do a lot of coordinating between all the different studios for all the various features that are under simultaneous development.

JP: *How did you get where you are today? How do you train to be an interface designer, and what other things have you worked on?*

Gavin: I actually started studying to be a graphic designer at college after high school, then found a course at a university that specialised in art for video games during my time there, so I thought to myself, "Why can't I merge both my passion for video games and graphic design into

Christine: Keybindings blockout

one?" So I did exactly that. I was always more a 2D focused guy with Photoshop and Illustrator skills, so I just kind of fell into the UI role as a lot of it has heavy graphic design elements. It's what I enjoyed doing the most. After graduating University, I worked at Crytek (*Crysis 3*), SONY (*Killzone Mercenary* and *Killzone Shadowfall*), Fullfat (various mobile game titles) and now I'm here at CIG.

Etienne: I have a bachelor's degree in Graphic Design. I started working in branding and advertising. Got bored of that circle, and got an opportunity to interview for EA Montreal. Didn't know much about UI, but had enough web and branding experience to pick it up. Stayed at EA for a couple years working on their franchises like *Need for Speed* and *Army of Two*. Then I got an opportunity to move to Eidos Montreal to start preproduction on *Thief*. I was in charge of the UI, oversaw the whole development and created the visual style, all the way through a rocky production. Once that was over, I saw a chance to join *Star* at BHVR.

Christine: Keybindings current version

JP: *"Star"?*

Etienne: + *Citizen*

JP: *Oh, that Star! :)*

So you specifically applied to BHVR to work on *Star Citizen*?

Etienne: Yeah, I had heard of the project before, and knew a couple people already on the project who told me I should apply because I would be useful.

Michael: Before working on *Star Citizen* at Illfonic, I worked at Petroglyph Games for two years after graduating from The Art Institute of Las Vegas with a Bachelor's Degree in Game Art + Design. While I was at Petroglyph I started out as a production Assistant on an MMORTS, *End of Nations* (which was a really cool project), before getting a chance to contribute art for another studio project, an MOBA, *Battle for Graxia*, where I served as a 2D artist. Before getting laid off from Petroglyph, the last project I worked on was another RTS which has recently been released, called *Grey Goo*. Shameless

ETIENNE: MOBIGLAS
BLOCKOUT

ETIENNE: MOBIGLAS
CURRENT DRAFT

plug alert: I also had the opportunity to contribute artwork for the Paul Richard's *Substrata* artbook, on which I designed the cover logo. I'm now at Illfonic, proud to be a part of *Star Citizen*, and happy to call Denver home.

Christine: I've worked in the game industry for eight years. I studied Graphic Design, and was working freelance for a while, when an old classmate said to me, "Hey come work for us! Brush up on your pixel skills!" So I did!

First started out on GBA, moved on to the Nintendo DS for a few years, then branched out onto almost every console on the market (XBOX 360, PS3, Wii, WiiU, and now PC).

I've been working on *Star Citizen* for almost two years now. :)

JP: *I hadn't realized that there was still Game Boy Advance development as recently as eight years ago.*

Christine: Yeah. It turned out to be the last game we made for that device here at BHVR. The world had moved on to bigger and better things.

Gavin: I loved my GBA when I was younger. xD

Michael: *Pokémon Pinball*!

Zane: I originally come from the world of web design, where I started designing webpages when I was around 13. I self-taught mostly everything I know including a multitude of authoring tools and scripting languages. As I just graduated from university not too long ago, most of the stuff I've done before CIG has been sort of as a hobby, whether it be digital art, brochures, or creating websites for local establishments. Some of my notable work includes a series of "tech" brush sets, a resource for artists, that I first started doing as far back as 2005, but which has proven to be quite popular – I can sometimes spot their use on TV or other games. I also did website development and graphic design for au-

Etienne: skyLine draft (mobiGlas app)

thor Troy CLE and his *Marvelous World* book series. Most recently, before coming on board to CIG, I worked on a browser-based game called *Galactic Conquest*.

JP: *How do you do what you do? Step us through the process.*

Etienne: Doing UI is a very iterative process. On the mobiGlas, we sit down with all the designers and brainstorm about basic concepts. Then i start mocking up to come up with a visual style while the game design gets refined. We bring it all together and present it to the engineers so that they can start building the core systems. Then i go back and start building the screens in Flash. Every step of the way is a back and forth between everyone involved.
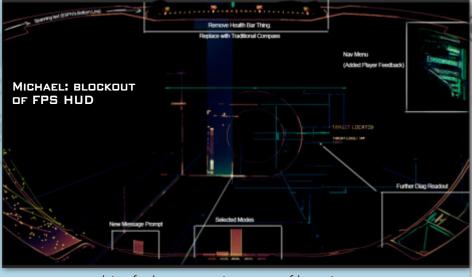
JP: *When you say "all the designers," I assume you mean the game designers, not just the interface designers?*

Etienne: Exactly. We are four designers at BHVR … two game and two interface.

Etienne: Augmented Reality contact lenses draft

Gavin: Generally, the process depends on the task. Some things have clear cut design briefs of specific features that need to be implemented in the design, which aids in the overall process, but sometimes it's a lot more creative and it's a case of trying multiple versions until it's both aesthetically right and functional. For example, the multicrew screens have very specific information that the player needs to be able to see and access at all times, and trying to find a creative uncluttered way to do that, and also be easy to use and look good, is pretty hard. But for other things like decals and logos, it's a lot more relaxed. We're basically given a brief run-down of what they are for, and we just throw ideas around. Generally we work with designers to make sure all the information that the player needs to be able to access is granted, and the aesthetics and functionality come down to us.

Michael: Coming from a background dealing mainly with games set within the RTS genre, moving toward an FPS

Michael: blockout of FPS HUD

was a bit of a large step in terms of learning new processes and design practices. In regards to work flow, I generally receive my tasks from our producers, I then sit with design to hammer out details. From there, it's a lot of back and forth between what I envision and what they would like to see. In the end, choices are made based on what is most important in any genre and with any media: the User Experience and User Functionality are the two most important aspects of any user interface.

JP: *How much do the five of you interact with each other? Are you constantly in touch, is this the first time you've met, or somewhere in between?*

Etienne: We had a UI summit in February in Montreal, where we all had a chance to meet each other in person. Well, all but Michael.

Michael: Yea ... I was passport-less. :(

Michael: preliminary draft of FPS HUD

Michael: I'd say communication between the five of us is rather good. We're in different timezones, and a few of us are in different countries/continents (which can make things a little tough). However, there is a constant back and forth between us all in order to maintain a consistent and unified look and feel for all UI across the board.

Gavin: The UI summit served as a bit of a meet and greet too, which was great. It's always good to meet face-to-face with people you work with across the globe. In terms of contact, we all have each other on Skype and e-mail, so when matters are pressing we can get in touch with one another pretty easily.

JP: *What were the key points of discussion at the summit?*

Etienne: Mostly pinpointing the next UI developments and getting on the same page. We tried to share common practices and optimization work.

JP: *Will every ship have a different interface? How do you decide what each specific interface will contain?*

Zane: Ship UI will vary depending on manufacturer, and each manufacturer will carry along its own unique design

ZANE: AURORA HUD:
DISPLAYS ON FLAT SCREENS

styles into its various management interfaces, HUD and helmet UI. In addition, different ships will also display information in different ways. For example, MISC and Origin ships are more advanced (in fiction) — in fact MISC ships are supposed to use a mix of alien and Human technology — and thus these ship manufacturers will display their information mostly in the form of holographic projections. On the other hand, military and old-school ships will display on flat panel displays and have switches and buttons and the like. The overall goal of this is to give each ship a unique feeling, a form of feedback for players that lets them know they are operating a slick and luxurious Origin ship versus a military fighter like you'd find made by Anvil.

ZANE: 300i HUD:
HOLOPROJECTED UI

Gavin: Currently, we change colour schemes depending on that, but overall the HUD is generally the same. As Zane said, that will change. Ideally we want the player to be able to customise his UI to show/hide the information he wants to see, with him being able to move and dock windows from the ship HUD to helmet HUD.

JP: *I think this means that there is a specific helmet for each ship – I won't be selecting a helmet separately from my ship?*

Zane: Helmet UI is driven by the ship. Think of the visor purely as a display device. You get into the ship, hook yourself up, and the ship feeds its information through to your visor. This is important because elements of the helmet UI as well as cockpit UI can be displayed simultaneously, so you want consistency in branding and style across everything. Otherwise it would look silly.

JP: *How about the FPS interfaces? Will each weapon have a different interface?*

Michael: The general idea with the FPS is that each of the helmets will be designed by a specific manufacturer. The HUD will be modified slightly to accommodate that specific manufacturer.

JP: *So specific weapons don't modify what you're seeing through the HUD?*

Michael: To be honest, I'm not entirely sure at this point in development, in regards to the multiplayer component. *S42* might have a more defined answer for this.

JP: *Are the FPS helmets different enough that I may end up selecting a specific helmet because of its HUD?*

Michael: It's a possibility, I suppose. But the helmet HUD is planned to be customizable by users, in terms of the placement of certain elements as well as their individual colors. With each helmet manufacturer offering a unique aesthetic, I suppose a player might want to wear helmet A vs. helmet B.

JP: *While we're on the subject of helmets, will I wear the same helmet for ship-to-ship encounters that I wear for FPS play? It sounds like I'll select a helmet for FPS, and then it will switch to the ship's UI when I'm operating a ship.*

Zane: The idea is that the transition from when you hook yourself into the ship to when you get out (or vice versa) will be seamless, and you will see the ship UI boot down at the same time the on-foot (FPS) UI boots up. It's all part of the same display device, just driven by different things. So yes, you can get in and out of ships with different helmets, and their displays will be generated by whatever entity is feeding them information.

JP: *What are the differences between a mobiGlas interface and an elevator interface?*

Etienne: The elevator has a futuristic elevator console where you choose which direction you go. It's placed inside the elevator, so you need to step up to it and interact. The mobiGlas is your smartphone of the future, always available. There's a huge difference in scope – the mG is a long-term development operating system that is a lot of work. The elevator console was done in a matter of a couple weeks.

JP: *What has been the most difficult interface, or the most difficult part of an interface, that you've designed for SC? (And why?)*

Michael: The most challenging as well as most rewarding interface thus far has been the FPS HUD. Coming from an RTS background, an FPS HUD is one of the most opposite things I can imagine when considering video game genres.

Etienne: I would say developing the mobiGlas, just the fact that it's SUCH a huge feature with so much depth possible. We are developing an operating system with the possibility of adding apps forever. The groundwork is very tricky to make sure that the basics are solid. We want

it super customizable for the player, too. I've never tackled anything this complex. Usually, in games you make pretty straightforward screens (New Game, Choose Level, etc.), but with the mobiGlas we want to make a tool for players that they will appreciate using for years

Michael: Traditionally, RTS games have a bit of a clunky UI, so going from that to a minimal/clean/futuristic style is challenging, but also opens my eyes and broadens the possibilities when designing an interface for any application.

Gavin: I'll have to go back to the multi-crew UI for mine. As I said before, it's a lot of information that we have to be able to convey in a functional manner to the players, and not only that but have multiple players interacting on similar but different screens. I was working with a systems designer on those screens, and we clashed/argued a few times on things like repeating

Gavin: early Multi-Crew draft
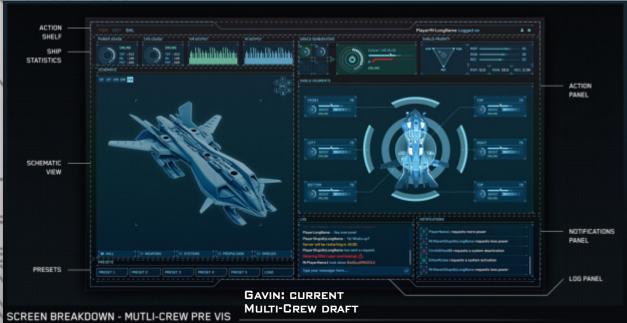
information, colour theory and layout. In a friendly, grown-up and professional way, of course! I think it was one of the most iterative things I've worked on to date, constantly evolving it until we got to the point we are at with it now; which I'm happy with! It's a constant challenge working here that we want to be so in-depth and give the players so much control and information, but there's only so much screen space to work with and you have to find creative solutions for over-crowding.

JP: *So basically, your biggest projects have been the most difficult projects – that makes sense. :)*

Zane: The most challenging aspect I'd say, just from a design standpoint,

Gavin: current Multi-Crew draft

SCREEN BREAKDOWN - MUTLI-CREW PRE VIS

is presenting the density of information we require in a way that "looks cool," futuristic, and somewhat believable for the time period that the game takes place in. Chris wants to push a lot of the interfaces to be immersive, and use a lot of 3D or be presented in 3D, and have a really "Iron Man"-esque feeling to them. So this does present a challenge in terms of usability and interaction, but we are actively developing and iterating on tech to handle this. I mean, say you're adjusting your ship loadout ... while it would be easy to just create some tabs and make a simple flat screen-space table of information which can list a lot of information all at once, this doesn't exactly fit with Chris's definition of an immersive interface. This isn't Microsoft Excel. We are building interfaces that are meant to be presented diegetically within the game world using in-game display elements, and because both your in-game character as well as you the player are aware of the UI, you feel much more connected to the game because the "how" and "why" of the interaction is justified.

JP: *"Diagetically"?*

Zane: The Constellation's fully diagetic HUD, in-engine

Zane: That means it's projected as part of the game world, as in your character can actually see and touch it, as opposed to a flat window on screen.

JP: *Several of you mentioned being 2D artists. Are you all working on 3D interfaces?*

Etienne: Yeah, most of our interfaces are 2D, but are presented and integrated in a 3D way so they physically live in the world. So it's a mix between 2D and 3D assets.

Christine: While each interface module presents its own challenges, the most challenging for me is not any one particular interface, but the process itself. UI development on *Star Citizen* is unlike any other game I've worked on (and I've worked on a whole lot ... 15-20 titles at least). It is a very real balance of meeting player need and expectation, meeting Chris Roberts' expectations, pushing our design problem-solving skills to the max, while trying to come up with an interface that looks like it's 900 years in the future (but still usable by players today) ... and trying to do that while working with 4+ studios who all have their own deadlines and obligations they are trying to meet.

JP: *Which interface, or part of an interface, was the most fun?*

Etienne: The most fun was developing some of the subscriber flair objects, specifically the easter egg locker. We sat down in a room and came up with a ton of funny ideas for what to put in that locker. (Mark's gold shirt, anyone?) Also, making the liquor cabinet, I had to come up with labels for 15 bottles of booze. So I had to go back to my packag-

ing roots to make a bunch of individual brands. It's fun because there's basically no limitation when you do stuff like that, you just have graphic design fun.

Michael: The funnest part of the UI work thus far has been logo/brand identity design. I love that stuff.

Gavin: That's a hard one! But I definitely enjoyed doing the boot-up animation sequences for some of the ship manufacturers (AEGIS, Consolidated Outland, Drake Interplanetary). It's just fun giving characteristics and personalities to them and trying to reflect what their company is like. Even though they are small 5 second animations of the logos that show during each ship's HUD bootup sequence, animating anything can instantly give it a personality and life. It was great to do those animations in Flash, give them to Zane to implement with the bootup sequences, then see them actually come to life when people were using the ships. I also really love doing ship decals. I did a set of fun ones for wings of ships to see what they would look like, and was given a lot of creative freedom in making them, so just got to go wild in Illustrator for a few days. :D

Etienne: Oh, I didn't know you made those ... I like them!

Gavin: :D Yeah, I did the logo anims in the boot ups for them – so much fun.

Christine: Sometimes work is a crazy wild rush, and you might not get the extra few minutes you need to get something to where you want it to be ... Some of the most fun I have is when I find those few extra minutes, or hours, and get the chance to put in a few finishing touches on an animation, or a layout, or a logo, that I didn't have time to do before. It's quite satisfying.

I also love working on little in-lore tasks ... like creating decals for environments. It's like UI candy for me. And of course, I also enjoy helping out on mobiGlas when I can ... it was the first feature I worked on when I started on *Star Citizen*. It's very exciting to see how much it has evolved, and how much farther it has to go.

Etienne: I love hiding jokes inside my mockups; it gets people online talking.

Gavin: A mock-up I made that had "lorem ipsum" in it (which is just dummy text that graphic designers use) ignited a discussion with people on the forums about what language was being used in the mock-ups. xD

JP: *Latin. Fake Latin.*

Gavin: Yeah, basically! But some people thought it was French. xD

Christine: Some tried to translate it … and thought it contained secret messages.

Etienne: It's French for: "Why are you translating me?"

Gavin: hahaha xD

Zane: Ah, lorem ipsum, I remember people wondering what it was all the way back when I was working on the new site (I put it everywhere).

JP: *I always think it's someone's name when I see it.*

Gavin: And I was doing a mock-up showing screen names of players once, and used my PSN tag Ctrl_Alt_Defeat, and people on the forums were trying to figure out which dev they knew used that handle.

Zane: Ctrl_Alt_Defeat is an awesome name.

Gavin: It's just fun seeing the community get involved so much.

And thanks, Zane. ~~I might have stolen it from a poster I saw at university years ago.~~ I mean it's totally original with me. :)

Christine: hehe

Zane: I'd say the most fun part of it for me would be the actual development process of getting the UIs integrated into the game. I just love the fact that I can make tweaks to my code and see it reflected directly in-game. It's hard to say which particular interface I had the most fun with, but I recently got really excited when I first saw the results of a procedural bootup sequence I wrote for the FPS HUD. I'm normally a quiet guy, but in this instance I literally yelled out, "Oh my god, this is AWESOME!!" and it's always super fun and exciting whenever something like that happens.

Gavin: Haha, yeah, that bootup of the FPS stuff looks swiiiiiish. :D

Michael: Yay, that is some badass ish!

JP: *This will have an obvious answer for some of you, but I'll ask it anyway: what are you most looking forward to in the next year or so?*

Etienne: On our side, it's the first time we'll be able to make the mobiGlas available for players. I can't wait to see all the bugs they find. :D Seriously though, seeing how people use it, it'll help us develop it even further. Even if our first version will be very, very light, it'll be cool to see.

JP: *Yeah, a lot of folks are looking forward to the mobiGlas.*

Gavin: I'm working closely with the 3D guys here on their progress of Shubin, how the interior will look with decals, sign posting, logos, advertisements and stuff, so I'm excit-

Michael: Modify Weapon current draft

ed to get the ball properly rolling with that and having the community see our progress. Shubin is such a huge station, and it's great to give it life and personality through its own brand. Apart from that, it's just great to be doing work that's in a constant stream to the community and not only having them use and experience your work but give their own feedback on the forums. We've managed to spark a few forum 'discussions' so far on mock-ups, which are just funny. xD

Michael: I'm also looking forward to the mobiGlas. The overall design for that application is just fantastic. It definitely takes the idea of a holographic Pip-Boy to the next level!

JP: *Help me, here ... "holographic Pip-Boy"?*

Etienne: The Pip-Boy is the interface system used in *Fallout*.

JP: *Please tell me that the little guy won't really be in* SC.

Michael: Oh no, just a comparison I like to think of. :)

Etienne: The connection is that the Pip-Boy is an arm device with a screen on it. We're taking it a whole lot further by projecting a holographic interface from it.

Zane: The thing I'm looking forward to the most is starting to develop the manufacturer-specific interfaces and getting all of the cockpit displays and buttons working and functional. I'm especially looking forward to doing all of the cool things we have planned for the holographic interfaces and how they will animate, be interacted with, etc. I can't wait for the day to come when I can jump into a ship with an Oculus Rift, start it up, and configure all of my ship's systems immersively as I look around and into the various displays and panels like I would be if I were piloting a real aircraft/jet. Not only that, but I can't wait to start working on multi-crew/capital ship UIs!

Christine: I'm really looking forward to the FPS release, as well as seeing players using the mobiGlas. I'm also really looking forward to players having a chance to walk around planetside (myself included!) ... I get blown away during art reviews seeing what the environment teams are creating. It's just amazing. My imagination goes crazy.

JP: *We're about done here; thanks to all of you for your time. Any final words?*

Etienne: I'm just glad to be working on this project, and with this talented UI squad. I hope we do more UI summits.

Christine: *Star Citizen* is an amazing project with an amazing community. It's been quite the experience so far and I'm looking forward to where we'll be in a few months as well as a few years.

Michael: Working on *Star Citizen* is an absolute privilege

Pip-Boy

to work on and I am blessed to be a part of it!

Gavin: Thanks to the community for being so supportive of the project, and being such great contributors in the entire development process. :D Love the entire UI team here, and here's to the future of *Star Citizen*!

And yesss, more UI summits please!

Etienne: <beer>

Zane: Well I'll say that we still have a long journey ahead of us as we continue to push forward and iterate on all of the various interfaces across all modules. As Etienne said, UI development is an extremely iterative process and what you see now can and will likely change drastically, but always for the better. Also, the game design is still in flux and because of that, elements of the UI may change as information needs to be added or removed.

What is amazing about working on this project is that we have access to instant community feedback on what generally works and what doesn't, and what problems most people are having that can be addressed (such as legibility issues, whether or not people find parts of the UI intuitive, etc.). Because of this, we can actively improve our

work based on the feedback from hundreds of thousands of our actual players. This is what I think motivates us to continually strive to do our best work and push beyond our limits.

I can't wait to see what this amazing team is going to produce in this next year of development! I think it's going to be amazing. :)

* * *

Meanwhile, while the mic was still hot …

Christine: UI Squad. I like that. :p
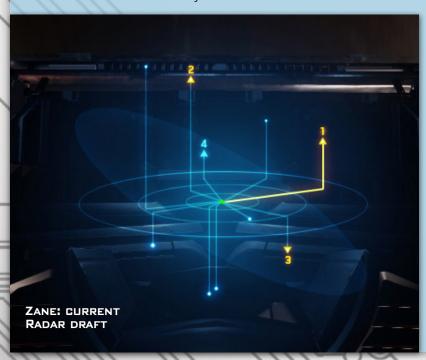
Christine: UI AwesomeSquad!

Christine: <Christine Marsh giggles>

JP: *So, should I include that Christine giggled?*

Christine: Sure. ;p

Etienne: That should be your title.

Christine: I giggle a lot. ^.^

Gavin: haha XD

Christine: Christine the Giggler

Christine: ©

Gavin: Christine Giggle Marsh

Christine: lol

Christine: Now I'm afraid of what the internet is gonna say.

Etienne: You should always be afraid of them.

Gavin: haha xD

Etienne: Before you know it … you'll be a meme.

Christine: Oh, dear.

Christine: Something to tell my kids when I'm an old lady.

Christine: My claim to fame.

TYROL
SYSTEM
HAVEN

A system on the brink of death, the Tyrol system consists of seven planets orbiting a late-stage red giant. While such estimates are difficult to make at a scale much below geological time, scientists believe that the star could expand and go supernova at any time in the next several thousand years. With the risk factor being so hard to calculate, the United Empire of Earth, in hopes of keeping casualties to a minimum when the star does collapse, has designated Tyrol a scientific research zone. This means that no one can own property in the system and any orbital structures need government approval. A number of entities, ranging from non-profit educational institutions to high level weapons manufacturers, have invested in expeditions to Tyrol aimed at studying the star's progress as well as other experiments that would be too hazardous to undertake in more populated systems.

There has however, emerged another reason to make the trek to Tyrol beyond scientific pursuits. Almost completely void of an Advocacy presence and with UEE Navy forces kept to a bare minimum, many come to the system to avoid the watchful eye of the law. Tyrol has emerged in the popular consciousness as being synonymous with wild, reckless abandon. The outlaws and miscreants who have chosen to populate the system's two unofficial settlements are often looked upon as romantic figures, Humans who have made the ultimate decision not to fear death and to live free. The reality is that most inhabitants of Tyrol made the choice out of desperation or simply because they had nowhere else to go.

Inner Planets

The first planet in the Tyrol System is a charred husk slowly being sublimed by the red giant. A series of connected research stations was constructed on the planet's largest surviving moon in 2930, as part of a research proposal to study a dying star up close. The consortium operating the base was able to do so for barely a decade; funding was cut in 2941 and the facility was quickly overtaken by a small smuggling community made up of squatters and malcontents. Known today as 'Front Row,' the moon's population has an appropriately dark sense of humor about the fact that they will be the first to experience Tyrol's supernova process.

Unlike Haven, another unlikely settlement on Tyrol V, the inhabitants of Front Row are rarely permanent. If you are looking for illegal goods and do not want any risk of police involvement, the dealers and fixers of Front Row are your best bet. It has become a place to meet with everyone from narcotics dealers to unscrupulous contract killers, with the providers of both passing through only so long as to hawk their wares. Just be mindful of the fact that you might find the entire system obliterated without notice should you schedule too long a layover!

The second and third planets in the system are less noteworthy. Scientists believe that Tyrol II was at one time a SuperEarth; today, it is an unrotating, flame-licked iron core. Tyrol III, although mineral-rich, is a similar graveyard. Discussion is ongoing as to whether it was a world destroyed by the star's evolution or if it had never completely formed in the first place. With the exception of scientific expeditions studying the surface, there is no reason to attempt a landing on Tyrol III.

TRAVEL WARNING Natural damage sustained during visits to near-nova star systems such as Tyrol is typically not covered by standard equipment or cargo insurance packages. Do not make the decision to visit Tyrol lightly!

Mid-System

In distant ages, Tyrol boasted a healthy green band that included both the system's asteroid field and the fourth planet. The asteroid field, a particularly dense one which likely would have become a planet given additional time, continues to furnish scores of valuable minerals sought after by miners that have the resources to bring their own equipment and aren't afraid of operating in a lawless system. Tyrol IV, speculated to have been a gas giant that has had its atmosphere completely stripped away, was initially a source of gemstones once generated by the gaseous overpressure; today, its valuable resources are much harder to find.

Tyrol V (Haven)

A likely candidate for the most interesting world in the Tyrol System is the fifth planet. The home of Haven, Tyrol V is interesting for one simple reason – the fact that it has locals at all. Formerly an icy ball, Haven's surface was melted away by the star's evolution into a red giant. What remains is a desolate rock, snaked with surface chasms and massive underground caverns generated by millennia under ice.

It's here, hidden beneath the surface's now-oppressive heat, that a peculiar blend of homesteaders, outlaws and nihilists make their homes. In popular culture, Haven is considered the 'last chance' for the irredeemable: a home for those that can no longer make their way in the civilized universe and those that no longer wish to. The ever-present threat of supernova looms large over the planetary culture, but it is ultimately treated as a fact of life. No resources are spent on evacuation transports or early warning systems; if you have chosen to live among the renegades on Haven, you have likely made peace with a world capable of snuffing out your live in an unexpected instant.

Visitors are cautioned not to leave the shade of Haven without heavy thermal shielding. An unprotected individual can survive mere moments of exposure on the planet's surface.

Outer Planets

The sixth planet in the Tyrol System is a typical Jovian-style gas giant. A churning mass of colored hydrogen and helium, Tyrol VI has thus far been minimally affected by the star's decline. The planet is frequently used for refueling by those foolish enough to transit the system, although there are no proper refineries. Independent scientists have camouflaged a high-tech holography transmitting rig inside an asteroid at one of the planet's Lagrange points, aiming to record what will likely be a very impressive light show should the supernova ultimately ignite the atmosphere (the astrophysics community is divided as to whether or not this will actually occur.) The hope is that the comm drone will be able to clear the jump point before the system burns.

The final planet in Tyrol is a small protoplanet whose formal status is hotly debated among those few who care. Whether "Seven" (as it is referred to in-system) is technically a planet or not, it is expected to be the only orbiting object not immediately impacted when the star goes nova. Several universities have discussed converting the planetoid into a permanent, manned deep-freeze base from which the process can be safely observed, although no one has locked down the requisite funding for such a venture.

Heard in the Wind
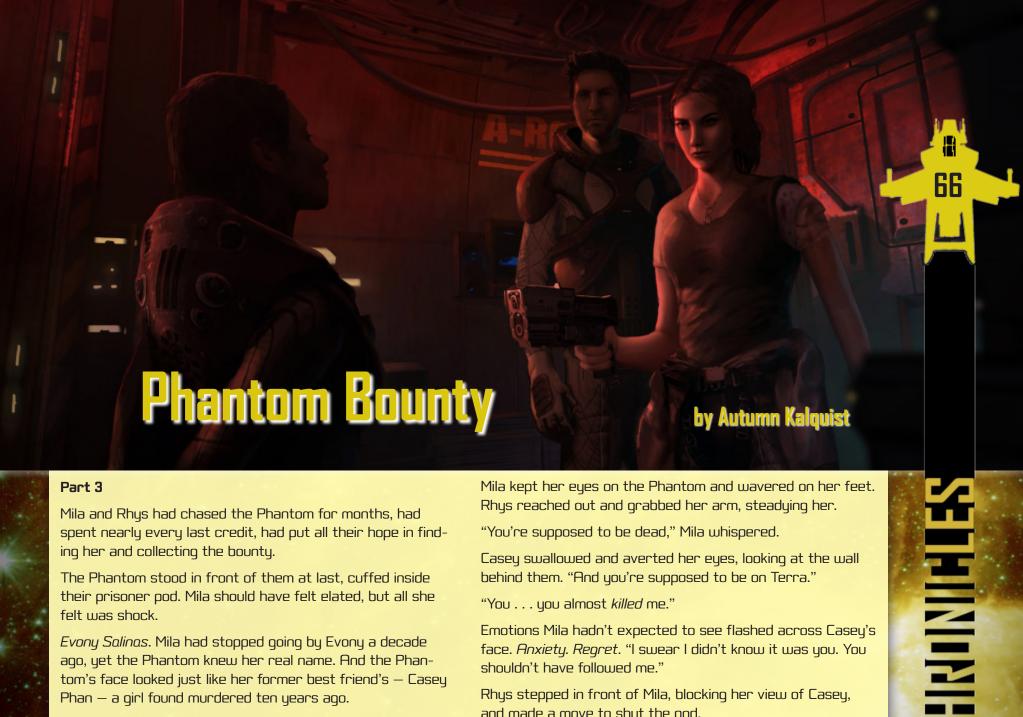
"Couple years back, I was posted up at Front Row waiting for some out-of-system grudges to cool when this ship nearly crashes while landing. Guy comes stumbling out, bleeding bad, starts yelling for Yanda, a medic who'd stop by there from time to time. Hollered for hours. Never did figure out that Yanda had drifted a day earlier. Hell of a nice ship, though. Still fly it to this day."

– Corinda Fenrick, Convicted Assassin, 2928

"Then let us use Tyrol as a reminder of the scope of Humanity's impact upon the universe. How desperately we try to shape the worlds around us, to force nature to comply with our will, our plans, and just how very small that effort is compared to the destructive power of a supernova."

– Dr. Flower Raith, Humanity Verses the Universe, Rhetor University Press, 2935

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GALAXIIE GUIDE

Phantom Bounty

by Autumn Kalquist

CHRONICLES

Part 3

Mila and Rhys had chased the Phantom for months, had spent nearly every last credit, had put all their hope in finding her and collecting the bounty.

The Phantom stood in front of them at last, cuffed inside their prisoner pod. Mila should have felt elated, but all she felt was shock.

Evony Salinas. Mila had stopped going by Evony a decade ago, yet the Phantom knew her real name. And the Phantom's face looked just like her former best friend's — Casey Phan — a girl found murdered ten years ago.

It couldn't be possible. But it was. The terrorist who had hit all those Phan Pharmaceutical labs was the founder's own daughter. And she wasn't dead. *She's alive.*

Mila kept her eyes on the Phantom and wavered on her feet. Rhys reached out and grabbed her arm, steadying her.

"You're supposed to be dead," Mila whispered.

Casey swallowed and averted her eyes, looking at the wall behind them. "And you're supposed to be on Terra."

"You . . . you almost *killed* me."

Emotions Mila hadn't expected to see flashed across Casey's face. *Anxiety. Regret.* "I swear I didn't know it was you. You shouldn't have followed me."

Rhys stepped in front of Mila, blocking her view of Casey, and made a move to shut the pod.

"Stop," Mila commanded.

Rhys sharply responded, "She's a terrorist, Mila."

"I need to talk to her."

Rhys paused and stepped back, working his jaw. "We can't stay here. We're sitting ducks." He looked at the Phantom. "Did you contact anyone to meet you?"

Casey pressed her lips together and didn't answer.

Mila clenched her hands into fists. "Everyone thinks you're dead. How could you . . . and now you're attacking your father's labs — killing people?"

Casey's nostrils flared. "It's not like that. I'll tell you. But not with *him* here." She pointed to Rhys. "I don't know him."

Rhys let out an abrupt laugh. "You tried to kill us *three times* today. That has to be some kind of record. Now you wanna give Mila some sob story, hope she'll free you? Yeah, that's not gonna happen."

Casey went rigid as Rhys started searching her spacesuit for anything she might be hiding.

Conflicting emotions swirled within Mila, anger warring with relief. How the hell could Casey be alive? She'd seen the reports of her murder, she'd attended the funeral. It was basically a state ceremony, with every ranking official on Terra in attendance.

Mila wore a solid black floor-length dress and a wide-brimmed Terran hat. She covered her face, crying the whole time as Casey's father gave the eulogy. Afterward, her own mother stayed by her side every day, helping her to get through the grief. Her mother had *always* supported her until the day she'd turned her back on her family and decided to become a bounty hunter.

And it had all started with Casey's death.

Casey Phan was supposed to be dead.

Mila met Casey's eyes. This . . . this person in front of her couldn't *be* her friend. Was it some kind of trick?

Rhys finished searching Casey, founding nothing, and slammed a fist into the button on the pod. The door eased shut, locking Casey away again.

When the door beeped, verifying it was secured, Rhys turned to Mila. He ran a hand through his brown hair, clearly trying to make sense of the situation. He shook his head. "Look. We gotta get out of here and back to Tevistal to hand her over to the Advocacy. We're too exposed right now if she called for back-up."

Mila nodded. She cast a glance back at the pod and saw the top of Casey's head through the glass panel. Her head was hanging low, the expression on her face not visible. How could this be happening?

Mila's stomach churned as she followed Rhys back to the cockpit. "Please. You fly. I'm no good right now."

Rhys took the pilot's seat and fired up the engines. He eased them away from the cargo ship and past Casey's abandoned Cutlass, through the floating detritus of the junkyard.

Mila pulled up the scanner, searching for signs of powered ships, but she found none. The scans were either blocked by the debris, or they were alone out here.

She and Rhys sat in tense silence until they reached the edge of the junkyard. A few ships popped up on their scanner, but all of them were docked at the nearby platform, Septa. None of them were headed their way.

"The Advocacy will want to go back and search her ship."

"I logged the coordinates," Mila said.

They pulled into open space, and the revelations of the last few minutes hung heavy in the air between them.

Mila took a deep breath.

"You asked me back on Tevistal . . . you asked why I couldn't let this bounty go?"

Rhys nodded, but didn't speak.

Mila sighed and settled back in her seat, trying not to be so aware of Casey, locked in a pod behind them. "Casey and I were really close. We grew up together. My father owned a components manufacturer, and her father owned a biotech firm, and they did business together. Our families spent a lot of time together. I thought I knew her." Mila's voice broke, but she forced herself to continue. "When I was sixteen, Casey went missing. They eventually found her body off-world — she'd been murdered. Her father threw everything he had at finding her, then at trying to track down her killer, but they never figured it out. I thought she was kidnapped or lured off planet. I couldn't believe she'd just take a transport off-world and not even tell me where she was going."

"So everyone believed she was dead."

"Yeah. They did. *I* did." Mila turned toward Rhys and gripped the armrest tightly. "Casey's death ten years ago was the *reason* I went into bounty hunting. I couldn't get justice for Casey, but I could for others. My family basically disowned me when I left. And when a terrorist started attacking Phan Pharmaceuticals again a few months ago. . . it brought up all those old feelings." Mila's eyes burned, and she tried to keep tears from coming, but failed. "Casey's murderer had gotten away, but now someone else was hurting the Phan family, and I could actually do something about it this time."

Rhys stopped the ship and let it drift. He took off his harness and leaned toward her to wipe the tears from her cheeks.

"Thank you for telling me."

Mila unstrapped her harness and got up. Rhys stood with her, wrapping her in a hug, which only made her cry harder. She gave in, letting him hold her for a few moments, then got it together and wiped her eyes.

She stepped away from him and blew out a breath. "I gotta talk to her. I can't hand her over without finding out the truth. I need to know what happened."

Rhys narrowed his eyes. "I don't trust her. She's dangerous. I need you to remember she's not the friend you grew up with. She might say anything to gain your sympathy."

"I know. I know. I just . . ."

"I'll stay up here. . . I can listen in if you want me to."

"No. She said she wanted to talk to me alone. Do you trust me?"

Rhys touched her face, wiping away the last of her tears. "You know I do."

Mila gave him a small smile and went to clean up at the sink to make sure didn't look like a mess. She couldn't let Casey see how much of an effect she'd had on her. Rhys was right. Casey was a terrorist now. She'd faked her own death. Those were the actions of a sociopath, at the very least. But she still needed to hear what Casey had to say.

* * *

Mila typed in the pod's code and stepped back as the door swung open. Casey blinked at her blearily and then straightened her shoulders.

"I want to talk," Mila said.

Casey narrowed her eyes. "Where's the other guy? I want proof he's not listening in."

"He's not. Take my word for it, or I'm closing this pod. You won't get another chance to talk."

The tension hanging in the air was palpable, and a trickle of sweat made its way down Mila's back.

Finally Casey relented, and she gave a stiff nod.

Mila let out a breath. "Why did you fake your own murder?"

Casey's eyes softened at something she saw in Mila's face, which threw Mila off balance again. Could a sociopath show empathy? Or was she faking that, too?

"That's not what happened," Casey said. "Trust me . . . it's eaten away at me that people I loved thought I was dead. But it was better that way. Safer for everyone involved."

"Explain."

"Are you taking me to the Advocacy now? How far out are we?"

Mila stepped forward and jabbed a finger into Casey's chest. Casey flinched back. "No. *I'm* asking the questions. And *you're* answering. What happened to you?"

Casey licked her lips. "Right before I . . . before I disappeared . . . I discovered some things. About what my father's company was doing. Illegal bio testing on Human subjects. The more I dug the worse it got. He was making bioweapons, Evony."

"Mila. My name is *Mila* now. And you're lying. If your father was into any of that, the UEE would have shut him down years ago."

Casey barked out a laugh. "There's so much that goes on under the surface. People get paid off along the way to keep things hidden. 'Law-abiding' Citizens deal in just as much dirt as the people you hunt. But I guess you wouldn't see it that way. I mean, you're a bounty hunter now. How did *that* happen?"

Rage flooded Mila. *I did this for you.* She suddenly couldn't stand to look at Casey any longer. She lifted a hand to shut the pod.

"Wait," Casey said. "Okay. You don't have to believe me, but I'll tell you everything."

Mila let her hand fall away from the button. "Fine. Talk."

"I my father on a private comm. . . He said things about experiments, getting rid of the evidence. It scared me. So I snooped through his mobi, found what I had hoped I wouldn't — terrible, cold reports. Then I had proof. But I didn't know who to go to."

"We were close." Mila's words came out like an accusation. "Why didn't you tell *me*?"

"I was terrified you'd go to your parents. Do you know how much *stock* they have in Phan Pharmaceuticals? They'd want to cover it up just like my dad did. When he caught me poking around, he got so angry I knew he was guilty. I needed to find a way to stop him . . . but how could I turn my own father in to the UEE?"

"You apparently don't mind blowing up his facilities and employees."

"I didn't . . ." Casey shook her head, looking frustrated. "Just listen. I showed up at a few of those anti-pharm meetings. I met a guy who called himself Desh. Said he and some others were secretly working to stop the pharmaceutical corporations that engaged in dirty work. I confessed I had information about a company — and he promised if I provided proof, he and his friends could make it stop. They said that no one else would get hurt."

"Seriously? You expect me to believe this? Were you really that stupid?"

Casey's face screwed up with regret. "I was sixteen."

"And what happened at these meetings? What happened with Desh?"

"He asked me to bring the proof with him to meet the other members. He and I boarded transports separately and met up off-world. But it all went sideways from there. He took me to a ship waiting at the edge of the system, and that's where I found out he was part of PF."

"People First. Yeah, I know them. Bunch of conspiracy theory nut jobs. They weren't mentioned *anywhere* in your bounty. You work alone. And they were smalltime. They haven't been active in years."

"You're wrong. They've just gotten better funding. And got better at covering their tracks."

"So what happened? You just . . . faked your own death and joined PF?"

Casey shook her head sadly. "Not exactly. Two Advocacy agents infiltrated us. Desh took them both out, but not before they transmitted an image of us back to Terra. We got out of there, but I couldn't go back to Terra."

This had to be an elaborate lie, but how else could she explain how her dead friend had disappeared from Terra as a teenager and turned up as a terrorist ten years later?

"PF took me with them," Casey continued. "They helped me disappear. They had people still on Terra who told me that my dad covered it all up . . . made it look like I was just an innocent bystander who died during the shootout. He made sure my name wouldn't be connected with PF. He covered it up with *your* mother's help, Ev."

Mila's pulse sped up, and she shook her head. "No. No, my mother wouldn't do that."

"She did." Casey's voice turned bitter. "Remember, my dad was making a run for the Terran Senate that year. He couldn't have it getting out I was seen with terrorists."

Mila pressed her lips together and laid a hand on the wall to stay standing. Her mother. A cover-up. She felt suddenly dizzy. Nauseous. Her mother had high-level connections as Chair of the Governors Council Budget Committee. If she was part of a cover-up . . .

"PF protected me," Casey said again, interrupting Mila's thoughts. "They gave me a new identity. I soon learned they destroyed facilities where illegal experiments were taking place. They freed test subjects who could be saved. We have benefactors in and out of UEE space that help fund our mission. PF seemed to be doing the right thing."

"You sound proud of yourself." Mila's voice rose. "Proud to be a terrorist. How many people have you killed?"

"I didn't." Casey pulled against her restraints like she wanted to move her hands, plead with Mila to believe her. A desperate look crossed her face. "Whatever they say about me isn't true. I get in, get the goods, destroy the labs, and get out. I'm not a murderer."

"You almost killed *us*. You planted a bomb in a *hostel*."

A rueful smile cracked through Casey's desperation. "But was it empty when you showed up?"

Mila narrowed her eyes and didn't respond.

Casey nodded. "It should have been empty. I paid a guy to warn everyone. It wasn't my fault if they stayed."

"So that's how you sleep at night. You just lie to yourself. Explain away everything bad you do."

Casey got quiet and averted her eyes. "No. I do what I have to do. Doesn't everyone?"

"Why are you even telling me all this?"

"You wanted to know."

"If you think it's going to make me free you . . . it's not. The Advocacy will try you for your crimes. You have to pay for your choices."

Casey's eyes widened. "Look — the things I've done probably have saved millions, maybe billions of lives. Do you *know* what was in the last lab I hit? They were working on a bioweapon that could take out entire *worlds*. Entire worlds, Ev. My father has been playing with fire for years, and we finally had the funding and information we needed to hit his labs. If I didn't do these jobs, some other PF agent would

have. And they might have left fewer survivors. He's my father. His crimes were my responsibility. But. . . that job was the last job I was ever going to do for them. You have to believe me."

"I don't. Of course you'd say it was your last job."

"I was giving it *all* up. PF doesn't just let people quit the organization . . . once you're in, you're in for life. I was on my way to meet someone who was going to smuggle me into Xi'An territory. If you let me go now, you'll never hear from me again. But I have to go somewhere *they* can't find me either."

Mila stayed silent for a few, long moments, then finally met Casey's eyes. "You were my best friend. I would have done anything to help you."

"You can help me now."

"No. You're the Advocacy's problem now."

Real fear appeared on Casey's face. "The Advocacy can't protect me. The second I'm in custody, I'm a liability to PF. I'm a problem to be taken care of. There's a reason no one knows much about them. And if they don't get me, my father will."

Mila's chest tightened, and she found herself repeating the words Rhys had said to her back on Tevistal. "There's always a choice. Always. You made the wrong one. I'll make sure you're taken to a secure facility."

"I have to warn you, then. If I do manage to make it to trial . . . I'll do whatever it takes to make sure my father is exposed. Your mother covered up my death, so I can't promise she won't be a casualty. After that . . . if my father doesn't kill me, PF will. If you hand me in . . . you'll be responsible for all of that."

Mila's anger flared. "Is that a threat? No. *You're* responsible for all of that." Mila slammed a fist on the pod button and the door swung closed on Casey, beeping when it sealed. Breathing hard, Mila stalked back to the cockpit.

Rhys lifted his brows, waiting for her to speak.

"You were right. She's a liar. Every word out of her mouth was a lie, and she just wants me to free her."

Rhys narrowed his eyes, searching Mila's face, worried about her. He ran a hand along her arm. "You okay?"

"I'm fine," Mila said, trying to talk around the giant lump in her throat.

"You just gotta keep remembering . . . that's not your friend in there. It's someone else."

"I know. Let's just get her back to Tevistal."

* * *

Mila and Rhys strapped back in, and she kept the scanner up as they retraced their course back to the planet they'd just left.

"I'm exhausted." Mila leaned back in the seat. They hadn't slept in almost twenty hours.

"As soon as we hand her over we'll crash."

Mila murmured a noncommittal reply.

"Do you want to sleep while I fly? You do look like you need it."

"Oh, thanks. No. I don't think I could, even if I wanted to."

"Are you really okay?"

Mila released her long brown hair from its tie and ran her fingers through it. "Honestly? No."

"I'm ready to hear what she said, whenever you're ready to share it."

"Just what you said she would. Claimed she wasn't a bad terrorist, whatever that means. She says her father is into . . . illegal testing. She says she's working with PF — the People First crazies." Mila pressed her lips together. She couldn't bring herself to say the things that could implicate her own mother.

Rhys worked his jaw. "So Casey's a front for something bigger, and her dad is just as bad as she is, but no one in the entire UEE has caught on to it in more than a decade." He shook his head. "Well, the Advocacy will know what to do with her. It's not our job."

"Yeah, I know."

Mila thought of the young girl she'd been friends with. Thin and petite, long black hair always hanging in her intelligent eyes. "I don't get it."

"People change."

"Ever since we were children, though . . . When we were twelve, there was this girl at school, Lia. Really wealthy, who held these ridiculous parties at her mansion. They'd bring in games, expensive prizes, the kinds of rides you'd find at fairs. It was crazy. We were all friends with her . . . until I accidentally insulted her one day at Academy. So I was the only one not invited to this party. Casey announced she was done with Lia in front of *everyone*, then stayed home the night of the party, watching old vids with me in our crash room. She was always doing stuff like that for the people she cared about. Always so . . . loyal. None of this adds up."

"There's never a good enough reason to do what she's done."

A long silence stretched on between them, and Mila's mind struggled to come to terms with the Casey she'd known and the Casey locked up in the pod on the *Devana*.

The story Casey had told . . . about finding the illegal research, about deciding to fix it herself . . . it did line up with the old Casey. It made Mila doubt . . . everything. And the fact that she felt doubt scared her. There was no room for doubt in this job.

"What if Casey's telling the truth?" she blurted out.

Rhys stiffened in his seat. "Then we let the *Advocacy* determine that," he said carefully. He looked toward her, studying her face. "We stick to the mission. The right thing to do is hand her over. If they determine she's telling the truth, the proper authorities can handle it. You and I will get away from all this . . . get some downtime. That was the plan, right?"

"Right," Mila answered quickly.

After a few awkward minutes, Rhys cleared his throat. "You know, this is the most you've ever told me about your past."

"You're a bounty hunter." Mila said, glad to drop the subject of Casey. "Didn't you research me before we went into business together?"

Rhys smirked, but it had no real mirth behind it. "Yeah. You did a good job wiping yourself off the map. Evony, huh?"

Mila winced. "Yeah. My family kind of disowned me when I joined the guild. This wasn't the life they had planned for their only child. I decided to start over, use my middle name."

"We all have histories . . . and a lot of us choose bounty hunting to leave those behind. I followed my gut about you." Rhys met her eyes, and she could see the open trust displayed there. "And I know I made the right decision."

Mila smiled, and they lapsed into silence for the rest of the flight back to Tevistal.

Rhys trusted her.

But could she trust herself?

<p style="text-align:center">*   *   *</p>

The pit in Mila's stomach grew worse as Rhys landed back at the Tevistal docks. He commed with maintenance and used up the last of their creds to get the forward screen patched right, and the maneuvering thruster replaced.

"I have just enough to hire a hover," he said to Mila, as he brought up the Advocacy office address and a list of the agents who worked there. "We can't risk broadcasting the Phantom's whereabouts. I know this Advocacy agent," he said, pointing to a name. "I've worked with him before, and I trust him. I'll make contact with him personally so we can hand Casey over. Then we get paid, and we get outta here."

Mila nodded, and Rhys headed back to their quarters to change into planetside clothes and grab his gear. Mila squeezed her hands tight in her lap and watched as the workers began to patch their forward Plexi from the outside.

I can do this. I can turn Casey over.

Mila stood up as Rhys headed back toward her.

She lowered the forward ramp for him and looked up at him, at the worry on his face, wondering what her own face looked like. His eyes crinkled around the edges and he leaned down to press his lips to hers. She kissed him back, relishing his warmth, willing Rhys and *his* loyalty and trust to erase her doubt over Casey.

He wrapped her in a tight hug. She listened to the thump of his heart beneath his shirt, and a new feeling of dread bloomed within her.

She didn't want to let him go, but he finally pulled away. "I should be back soon with agents. Don't let anyone inside this ship."

"I won't."

"Everything will be *fine*." Rhys kissed her gently again, and then she was watching his back as he headed down the ramp to the docks.

Mila retracted the ramp and went back to the co-pilot's seat, not allowing herself even to look at the pod holding Casey.

She'd never had such a hard time turning a criminal in before. But then, she'd never personally known a criminal like this. It was good Rhys was handling it. She couldn't.

He had faith in her, and that meant everything. This was her life now. And she needed to do her job.

But . . .

Mila activated her mobiGlas and accessed the local network. She searched a decade back, looking for old news posts about Owen Phan and Casey Phan's death.

The first image she pulled up was of Owen Phan during his failed Senate run. Owen and Casey's mother Lynn stood together at a charity event. And next to them: Mila's parents. Mila's heart lurched. Her mother stood between her father and Owen. She pulled up another dozen images, and more than half of them showed her parents with the Phans. If Casey was telling the truth, then Casey's trial would destroy *both* their families.

And if it was true, it meant her own mother had lied to her, let her mourn when Casey wasn't even dead. Mila took a deep breath and pushed down her anger at the thought. She searched for articles on Casey's death.

Phan Pharmaceutical Heir Found Murdered Off-World

Mila had read this statement dozens of times. Casey had taken a trip on her own. Someone had killed her. Wrong place, wrong time. Murderer never found. Family devastated. No new leads. Case closed.

Mila ran a new query.

Phan Pharmaceutical, Illegal Bioweapons

More than a thousand results appeared. Mila raced through them. Most of them were PR releases from Phan Pharmaceutical themselves, promoting all the hard work they'd done to stop the creation of bioweapons. The

Spectrum wasn't getting her anywhere. She was going to have to dive deep into the boards. She switched her profile over to a persona she had built up for just such occasions and began pinging threads.

Within seconds messages appeared.

Illegal test subjects.

Proof of bioweapon development.

Suspected facilities.

Heart in her throat, Mila scanned the documents someone named "DarkStar" had uploaded. The list contained *all* the facilities the Phantom was reputed to have hit in the past few months. Why hadn't Mila thought to do this research before? She'd been so focused on tracking down the Phantom, she'd ignored any possibility that Phan Pharmaceuticals might have done something to *deserve* the attacks.

But there was never a good reason for terrorism. There wasn't.

Another user had posted documents with the claim that Phan's research facility on Gen was up to its eyes in psychoactive weapons. It was the third facility the Phantom had attacked.

Mila pulled up the documents. Internal memos with the Phan Pharmaceuticals logo on top. Redacted statements recovered. References made to the *ILIOS Project*. Mila skimmed them, her heart pounding.

100% fatality rate

Spread quickly through physical contact

Quarantine

Buyers from four worlds

This wasn't proof. Maybe they were working on a cure for something, not a disease. But what disease still existed that had a 100% fatality rate . . . something people would want to buy a cure for? Mila exited her search and got to her feet. Her hands were shaking as she made her way back to Casey's pod and typed in the code. It beeped back at her and flashed red.

She tried it again. It denied her access. Again.

Rhys had changed the code on it. He *hadn't* trusted her.

The realization was a kick in the gut. She assumed things . . . believed things to be true. She'd thought he trusted her. But she'd built her whole life on lies. And now everything she'd taken as truth was falling apart around her.

Mila swallowed hard and held her mobiGlas up to the panel. She activated the hack program she'd used back at the hostel, and the door swung open.

Casey blinked at her. "The Advocacy here?"

"How do I know you're telling the truth about the bioweapons? Do you have proof?"

Casey's eyes widened. "I destroy everything when I go in. That's the point."

"I can't —"

"Evony. I knew you. You knew me. Am I lying to you?" Her eyes were wide, pleading.

Mila shook her head. "I don't know . . . I . . ."

She met Casey's eyes and tried to see the girl she used to know. Mila couldn't be responsible for her childhood friend's murder. Not after she'd already grieved once. And she couldn't risk Casey bringing down the whole Salinas family with her. Because something in her gut told her that her mother might well have done whatever it took to help the Phan family succeed. Her mother was perfectly capable of manipulating reality to fit with her goals.

Mila groaned. "If I let you go, you'll leave? You'll leave and never come back?"

A light sprang into Casey's eyes. "If you can help me get to the meeting with my patron, she'll get me into Xi'An territory. You'll never see or hear from me again. I swear it."

"I don't want Rhys involved in this . . . I'll say . . . I'll say you overpowered me, stole the ship. They can find me later."

"Yes. We'll keep him out of it. I promise."

"You better not make me regret this." Mila used her mobi to release the cuffs from the interior bar.

Mila clenched her jaw tight as she loosened Casey's cuffs. If she was wrong about this, Casey could try to overpower her right now and escape. But the blows never came.

Instead, Casey threw her arms around Mila, surprising her with a tight hug. "You won't regret this." She stepped back and massaged her red wrists. "Now tell me what I need to do."

"I'll fly us out of here," Mila said. "You navigate us to your meeting point."

They hurried to the cockpit, and Mila barely breathed, still expecting a betrayal, waiting to see if she'd made a mistake. But Casey didn't turn on her. Not yet, anyway.

Right after they'd strapped into their seats, the comm crackled. "Mila," Rhys's voice came through. "Ten minutes out by hover."

Mila jabbed a finger into the comm. "Received. Everything's . . . good."

"See you soon," Rhys said.

Dread threatened to engulf Mila, but she tried to ignore the feelings as she took the controls. In the seat beside her, Casey pulled up the comms and requested emergency clearance to take off.

If they made it off-world, Rhys would never, ever forgive her. But it was too late. She'd made her decision, and now Casey Phan, the *Phantom*, sat beside her, ready to escape UEE space once and for all.

Clearance came in, and Mila fired up the engines.

"Thank you, Ev. I mean it. I don't deserve your trust after . . ."

Mila just shook her head. "No. You don't."

"Mila." Rhys's panicked voice came over the comm. "Mila, I have you in sight. Why are the engines fired up? What's going on?"

Mila activated the comm, and winced against a jolt of pain in her shoulder. The numbing agent was fading, the burn from her pistol wound returning. Casey had shot her, and here she was freeing her. Mila stared at the comm and tried to think of what she could say to Rhys. But there was nothing to say.

She'd have to lie to him if she got out of this alive. Whatever they'd had together . . . it was over now, burned by her decision. And the less he knew, the better off he'd be.

I'm so sorry, Rhys.

She removed her finger from the comm without saying a word and lifted the *Devana* into the sky.

To be continued